NOVEMBER 1989

TELEUISION

SERVICING-PROJECTS-VIDEO-DEVELOPMENTS

Extra: HRS Video Head Chart



Servicing the Panasonic NV730B
The High-band 8mm System • DX-TV
Ferguson's SRA1 Satellite Receiver
Servicing the Philips KT3 Chassis
VCR Clinic • TV Fault Finding
Dealing in Second-hand VCRs

A COMPLETELY NEW DIMENSION IN SOUND QUALITY!

TOR DECARER TOR D

728 DECODER PROJECT KIT

The Maplin NICAM 728 Decoder converts the additional digital code present* in the TV signal to a high quality stereo soundtrack with a quality similar to that of Compact Disc.

This fully working system is based upon the Toshiba NICAM chip set which has only just become available. For full introduction, text and illustrations plus an introductory article by the IBA, see the first part of our 3-part series in the October 1989 edition of Electronics – The Maplin Magazine (XA34M price £1.00). It's on sale from September 8th, so order your copy TODAY!

*Currently being transmitted from Crystal Palace and Emley Moor See the Maplin Magazine for IBA launch schedule.

Upgrades almost any modern colour TV set – no need to purchase a new TV set or VCR!

Features

- ★ Single +12V power requirement
- ★ Automatic audio switching (Mono-Stereo-Bilingual)
- ★ British Design
- ★ Reverts to FM audio if NICAM is not present
- ★ High Quality Optimum Performance without any additional ICs
- ★ NICAM mode indicators

British Digital Stereo Sound for Television

The World's most advanced high quality stereo system for landbased television!

TELEVISION ENGINEERS



This price available to trade only, ring 0702 552961 and quote LP02C special 5 off deal reference: Television.

Normal Price £99.95 (Inc. VAT) each (Order Code LP02C)

Initial availability limited - book your orders now!

MARIE ELECTRONICS

CREDIT CARD HOTLINE









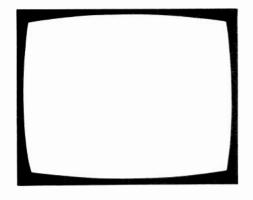
0702 554161

PHONE BEFORE 5PM FOR SAME DAY DESPATCH

ALL PRICES INCLUDE VAT.

All items subject to availability, all items will be on sale in our shops in Birmingham, Bristol, Leeds, Hammersmith, Edgware. Manchester, Nottingham, Southampton and Southend-on-Sea.





November 1989

Vol. 40, No. 1 Issue 469

On sale October 18th

COPYRIGHT

© IPC Magazines Limited, 1989. Copyright in all drawings, photographs and articles published in Television is fully protected and reproduction or imitation in whole or in part is expressly forbidden. All reasonable precautions are taken by *Television* to ensure that the advice and data given to readers are reliable. We cannot however guarantee it and we cannot accept legal responsibility for it. Prices are those current as we go to press.

CORRESPONDENCE

All correspondence regarding advertise-ments should be addressed to the Advertisement Manager, "Television", King's Reach Tower, Stamford Street, "Television", London SE1 9LS. Editorial correspondence should be addressed to "Television", IPC Magazines Ltd., King's Reach Tower, Stamford Street, London SE1 9LS.

Indexes to Vols. 36 and 37 are available at 80p each from the Editorial Office (address above).

SUBSCRIPTIONS

An annual subscription costs £20 in the UK, £24 overseas (by surface mail). Send orders with payment to Quadrant Subscription Services Ltd., Oakfield House, Perrymount Road, Haywards Heath, Sussex, RH16 3DH.

BACK NUMBERS

Subject to availability, copies of issues published during the last 12 months are available at £1.80 each from Television, John Denton Services, Unit 13, Thornham Grove, Stratford, London E15 1DN. Please make cheques/postal orders payable to IPC Magazines Ltd.

We regret that we cannot answer technical queries over the telephone nor supply service sheets. We will endeavour to assist readers who have queries relating to articles published in Television, but we cannot offer advice on modifications to our published designs nor comment on alternative ways of using them. Correspondents should enclose a stamped addressed envelope. Requests for advice on dealing with servicing problems should be directed to our Queries Service. For details see our regular feature "Service Bureau". Send to given address above (see the "correspondence").

this month

13 Leader

16

Teletopics

News, comment and developments.

What Next?

Les Lawry-Johns

Trouble with a G11 and some other sets.

CCTV Faults

Peter Graves

More odd happenings peculiar to the world of closedcircuit TV.

19 Servicing the Panasonic NV730

Nick Beer

Panasonic's second dual-speed VCR has a distinctive fault pattern. A comprehensive run down on mechanical maintenance and fault finding.

22 Letters

Test Report: Sadelta MC42 Pattern Generator

Alfred Damp

Bought as a replacement for workshop use this generator soon proved its worth.

Servicing the Philips KT3 Chassis 24

How to tackle the faults that commonly occur in sets fitted with this popular chassis.

Next Month in Television 25

Long-distance Television 26

Roger Bunney

John Coombes

Reports on DX reception and conditions and news from

abroad.

Berlin Radio Show Report 28

George Cole

The latest equipment and developments revealed at Europe's premier consumer electronics goods event.

The High-band 8mm Video System 31

George Cole

Hi8 is the 8mm video camp's answer to S-VHS. System specification and an account of the technology that has

made the system possible.

TV Fault Finding

Reports from Philip Blundell, Eng. Tech., Jeff Herbert, Mick Dutton, Ian Bowden, Nick Beer, Stephen Leatherbarrow and P. Rafferty.

Joe Cieszynski

Servicing Compact Disc Players, Part 9 36 Digital-to-analogue conversion techniques, how the leftand right-channel signals are separated, filtering and oversampling.

40 Servicing Aids Nick Beer

Some recent purchases for the service department.

Dealing in Second-hand VCRs

Malcolm Burrell

Practical guidance for those considering entering this field.

VCR Clinic

Reports from Philip Blundell, Eng. Tech., A. Farnborough, Joe Cieszynski, lan Bowden, Nick Beer, Stephen Leatherbarrow, Alfred Damp and William G.

Ferguson's SRA1 Satellite TV Receiver

J. LeJeune

The workings of Ferguson's latest satellite TV receiver and some recommendations on installation.

- Service Bureau 48
- **Test Case 323**

OUR NEXT ISSUE DATED DECEMBER WILL BE PUBLISHED ON NOVEMBER 15

| LINEAR IC'S — Cont. IEA-1002 650p TLO-61 40p TLO-64 80p TLO-71 38p TLO-72 35p TLO-72 92p TLO-81 40p TLO-82 46p | 2SA-979 85; 2SA-984 30; 2SA-992 30; 2SA-1006 120; 2SA-1008 125; 2SA-1009 200; 2SA-1011 140; 2SA-1011 140; 2SA-1013 30; | P 2SC-1115 2SC-1116 2SC-1161 2SC-1162 2SC-1164 2SC-1172 2SC-1173 2SC-1173 2SC-1195 2SC-1212 | 280p 290p 110p 35p 600p 150p 45p 210p 120p | 2SC-2228A 60p 2SC-2229 25p 2SC-2230 80p 2SC-2235 100p 2SC-2235 60p 2SC-2236 300p 2SC-2237 600p 2SC-2238 70p 2SC-2238 25C-2258 120p | 2SC-3179 2SC-3181 2SC-3209 2SC-3212 2SC-3225 2SC-3244 2SC-3260 2SC-3260 2SC-3261 2SC-3263 | 160p 240p 120p 510p 100p 80p 70p 400p 500p 350p | 2SD-794 2SD-795A 2SD-811 2SD-819 2SD-820 2SD-821 2SD-822 2SD-826 | 80p 400p 100p 140p 450p 450p 550p 400p 100p | 2SD-1608 210g 2SD-1609 100p 2SD-1609 500p 2SD-1649 260o 2SD-1663 2500 2SD-1663 450p 2SD-1666 120p 2SD-1666 120p 2SD-1668 120p 2SD-1668 120p | 2SD-1941 2SD-1984 2SJ-49 2SJ-50 2SJ-77 2SK-19 2SK-49 2SK-55 2SK-68 2SK-134 | 500p 150p 425p 425p 350p 45p 50p 100p 100p | VIDEO HEADS JVC/AKA/FERGUSON 3HSS For all Models) NATIONAL PANASONIC 4HSS = 3HSSN RN322, NV332, NV340, NV2000, NV2010, NV8170, NV8200, NV8200, | £12.80 £12.00 NV7000, |
|--|--|---|--|---|--|--|--|--|--|---|--|--|--|
| TLO-83 87p TLO-84 80p ULN-2002 70p ULN-2003 69p ULN-2004 87p ULN-2803 130p ULN-2803 170p ULN-2804 170p UPC-18C 180p UPC-20C 220p UPC-555 80p UPC-555 80p | 2SA-1016 40) 2SA-1018 100 2SA-1060 150; 2SA-1069 25A-1076 280; 2SA-1084 100; 2SA-1091 100; 2SA-1091 100; 2SA-1091 25A-1102 2SA-1103 200; | P 2SC-1214 P 2SC-1215 P 2SC-1216 P 2SC-1226 P 2SC-1279 P 2SC-1306 P 2SC-1308K P 2SC-1312 | 50p 40p 60p 200p 75p 110p 30p 90p 350p 40p | 2SC-2259 80p 2SC-2271 60p 2SC-2274 40p 2SC-2275 50p 2SC-2278 120p 2SC-2290 1800p 2SC-2291 125p 2SC-2295 60p 2SC-2298 120p 2SC-2307 500p | 2SC-3264 2SC-3277 2SC-3280 2SC-3281 2SC-3293 2SC-3298 2SC-3299 2SC-3303 2SC-3306 2SC-3316 | 510p 280p 300p 300p 85p 120p 120p 170p 200p 280p | 2SD-836A 2SD-837 2SD-836 2SD-844 2SD-844 2SD-845 2SD-856 2SD-856 2SD-858 | 150p 200p 80p 400p 160p 200p 250p 260p 80p 250p | 2SD-1739 45Cp 2SD-1783 10Cp 2SD-1815 10Cp 2SD-1825 1 2Op 2SD-1843 10Op 2SD-1844 35Op 2SD-1846 35Op 2SD-1910 28Op | 2\$K-135 2\$K-147 2\$K-192 2\$K-195 2\$K-197 2\$K-312 2\$K-323 3\$K 88 | 415p 160p 45p 150p 140p 750p 130p 70p | NV3600, NV8610, NV8620). AKAI VS-109/201/202/301/303 | £24.00 |
| UPC-556H 80p UPC-566 60p UPC-571 220p UPC-574 80p | 2SA-1104 2001 2SA-1105 2501 2SA-1106 2501 2SA-1111 1201 2SA-1112 1501 2SA-1123 701 | 2SC-1318 2SC-1325 2SC-1327 | 25p 400p 20p 40n | 2SC-2308 40p 2SC-2312 300p 2SC-2314 70p 2SC-2320 40p 2SC-2324 120p | 2SC-3327 2SC-3331 2SC-3333 2SC-3355 2SC-3356 | 60p 40p 120p 90p 120p | 2SD-864 2SD-866 2SD-866A | 60p 200p 120p 140p 450p | W005 1A/50' W01 1A/100' | v | 16p 18p | AMSTRAD VCR 4500, 5200, 9000 VCR 7000 | £19.50 |
| UPC-576 200p UPC-577 64p UPC-580 300p UPC-592 95p UPC-595 190p UPC-596 190p UPC-1001 220p UPC-1018 170p | 2SA-1123 70; 2SA-1124 80; 2SA-1127 50; 2SA-1133 200; 2SA-1141 350; 2SA-1152 150; 2SA-1156 150; 2SA-1170 500; | P 2SC-1342 2SC-1345 2SC-1358 2SC-1359 2SC-1383 P 2SC-1384 P 2SC-1390 | 120p 60p 350p 60p 35p 35p 35p 55p | 2SC-2329 480p 2SC-2331 150p 2SC-2333 200p 2SC-2334 240p 2SC-2335 120p 2SC-2347 80p 2SC-2353 120p 2SC-2360 120p | 2SC-3358 2SC-3378 2SC-3393 2SC-3400 2SC-3402 2SC-3416 2SC-3417 2SC-3419 | 80p 120p 80p 40p 50p 80p 90p 120p | 2SD-870 2SD-871 2SD-879 2SD-880 2SD-882 2SD-892A 2SD-894 | 400p 450p 60p 40p 80p 100p 120p 200p | WO2 1A/2200' WO4 1A/400' WO6 12/560' WO8 1A/860' BR81D 2A/100' BR82D 2A/200' BR84D 2A/400' BR86D 2A/600' | V V V V | 19p 21p 23p 28p 33p 33p 37p 43p | FERGUSON 3V32/JVC HR7655 3V42/4M45/46/47 | £38.00 £21.00 |
| UPC-1020 200p UPC-1023 60p UPC-1025 230p UPC-1026 230p UPC-1026 95p UPC-1028 90p UPC-1032 90p UPC-1032 60p UPC-1158H2 70p UPC-1181 110p UPC-1181 110p UPC-1182 110p UPC-1183 100p UPC-1183 100p UPC-1183 100p UPC-1183 100p | 2SA-1186 5009 2SA-1208 701 2SA-1208 1000 2SA-1209 1000 2SA-1210 1200 2SA-1210 1200 2SA-1210 1200 2SA-1261 1200 2SA-1262 1200 2SA-1263 2800 2SA-1265 2800 2SA-1269 2SA-1290 2SA-1290 2SA-1290 4500 | 25C-1398 25C-1403 25C-1403 25C-1403 25C-1413 25C-1419 25C-1424 25C-1448 25C-1448 25C-1454 25C-1454 25C-1454 | 70p 500p 550p 240p 150p 450p 100p 100p 120p 200p 320p 40p | 2SC-2361 150p 2SC-2362 50p 2SC-2369 100p 2SC-2371 45p 2SC-2373 210p 2SC-2208 120p 2SC-2408 120p 2SC-2413 50p 2SC-2413 50p 2SC-2458 50p 2SC-2459 50p 2SC-2470 625 | 2SC-3420 2SC-3450 2SC-3450 2SC-3459 2SC-3460 2SC-3461 2SC-3466 2SC-3467 2SC-3468 2SC-3468 2SC-3503 2SC-3503 | 120p 110p 350p 200p 250p 300p 400p 350p 70p 70p 300p 120p 90p 120p | 2SD-896 2SD-900 2SD-905 2SD-916 2SD-917 2SD-921 2SD-923 2SD-946 2SD-950 2SD-951 2SD-957A | 200p 400p 600p 130p 300p 320p 360p 120p 120p 300p 350p 550p 60p | BR88D 2A/800 BR32 3A/200 BR34 3A/400 BR36 3A/600 BR66 8A/200 BR64 8A/400 BR251 2SA/200 BR254 25A/200 BR256 2SA/600 BR258 2SA/800 BR351 3SA/100 BR353 3SA/200 BR353 3SA/200 | V V V V V V V V V V V V V V V V V V V | 43p 43p 44p 80p 72p 150p 165p 185p 200p 240p | FISHER FVHP510/520/530/615/620/622/710/715/72 722/910 FISHER VBS 7100/VBS 7500 FISHER VBS 99000/VBS 9900 | |
| 1185H2 230p UPC-1186 80p UPC-1187 150p UPC-1188H 400p UPC-1197 140p UPC-1200 325p | 2SA-1295 5005 2SA-1301 3505 2SA-1302 4005 2SA-1307 1605 2SA-1318 305 2SA-1318 2006 | 2SC-1474 2SC-1475 2SC-1505 2SC-1507 2SC-1509 | 125p 60p 80p 140p 45p | 2SC-2482 40p 2SC-2483 120p 2SC-2484 240p 2SC-2500 80p 2SC-2519 60p 2SC-2527 300p | 2\$C-3547 2\$C-3568 2\$C-3583 2\$C-3595 2\$C-3605 2\$C-3631 2\$C-3636 | 100p 200p 170p 220p 60p 130p 280p | 2SD-970 2SD-973 2SD-973A 2SD-985 2SD-986 2SD-1012 | 170p 60p 70p 120p 120p 120p 120p | BR354 35A/400' BR356 35A/600' BR358 35A/800' BY164 1.5A/100' BY179 1.5A/800' | V V V | 225p 230p 250p 40p 40p | | £20.00 £38.00 |
| UPC-1223 210p UPC-1230 210p UPC-1238 120p UPC-1263 230p UPC-1277 240p UPC-1278 240p UPC-1350 115p UPC-1353 160p UPC-1363 190p | 2SA-1346 30; 2SA-1352 100; 2SA-1353 100; 2SA-1356 100; 2SA-1370 100; 2SA-1381 100; 2SA-1381 100; 2SA-1381 400; | 2SC-1514 2SC-1515 2SC-1520 2SC-1541 2SC-1545 2SC-1567 2SC-1569 2SC-1570 2SC-1570 | 60p 120p 110p 120p 140p 140p 40p | 2SC-2545 65p 2SC-2547 65p 2SC-2550 70p 2SC-2551 150p 2SC-2553 200p 2SC-2553 250 2SC-2564 230p 2SC-2564 230p 2SC-2565 260p | 2\$C-3657 2\$C-3668 2\$C-3678 2\$C-3678 2\$C-3715 2\$C-3717 2\$C-3719 2\$C-3746 | 400p 120p 160p 280p 200p 480p 120p 150p 120p | 2SD-1022 2SD-1024 2SD-1031 2SD-1046 2SD-1051 2SD-1060 2SD-1064 2SD-1071 2SD-1073 | 400p 130p 130p 200p 130p 130p 250p 450p 350p | TRIACS TIC206D — 4A/400° TIC225D — 6A/400° TIC226D — 8A/400° TIC236D — 12A/400° | v v | 60p 69p 68p 85p | HITACHI VT19 HITACHI VT120, VT 220 HITACHI VT3000 HITACHI VT5000, VT 5500 HITACHI VT65, 7000, 8000, 8300, 8500, 870 | £38.00 £31.50 £14.00 £20.00 |
| UPC-1365 320p UPC-1368H 425p UPC-1373 85p UPC-1378 210p UPC-1382 110p | 2SA-1423 30 j 2SA-1443 250 j 2SA-1489 300 j 2SA-1491 300 j 2SA-1516 380 j | 2SC-1586 2SC-1617 2SC-1624 2SC-1625 | 540p 340p 140p 150p | 2SC-2568 120p 2SC-2570 60p 2SC-2577 125p 2SC-2578 220p 2SC-2579 130p | 2SC-3747 2SC-3789 2SC-3790 2SC-3795 2SC-3798 | 120p 75p 120p 200p 220p | 2SD-1111 2SD-1128 2SD-1135 2SD-1138 | 520p 60p 200p 150p 80p | TIC246D — 16A/400' TIC253D — 20A/400' TIC263D — 25A/400' T2800D — 8A/400' | v v | 190g 190g 205g 52p | NATIONAL | |
| UPC-1394 170p UPC-1397 480p UPC-1397 480p UPC-1403CA 750p UPC-1408 100p UPC-1407 200p UPC-1408 400p UPC-1535C 400p UPC-1535C 550p UPC-1535C 550p UPC-1535C 3100p UPC-1535C 310p UPC-153 | 258-324 55; 258-360 35; 258-561 35; 258-561 35; 258-562 35; 258-562 35; 258-562 35; 258-566 110; 258-595 80; 258-596 50; 258-648 55; 258-648 55; 258-648 40; 258-648 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-689 120; 258-703 125; | D 25C-1627 2SC-1674 2SC-1675 2SC-1675 2SC-1684 2SC-1684 2SC-1789 2SC-1729 2SC-1729 2SC-1730 2SC-1741 2SC-1741 2SC-1756 2SC-1756 2SC-1756 2SC-1756 2SC-1756 2SC-1756 2SC-1756 2SC-1756 | 60p 50p 200p 120p 45p 60p 900p 900p 40p 40p 45p 90p 40p 30p 20p 65p 100p | 25C:2580 240p 25C:2591 140p 25C:2591 140p 25C:2501 85p 25C:2501 85p 25C:2501 85p 25C:2501 85p 25C:2501 95p | 2SC-3811 2SC-3832 2SC-3853 2SC-3853 2SC-3883 2SC-3890 2SC-4020 2SC-4262 2SD 198 2SD-199 2SD-201 2SD-257 2SD-315 2SD-315 2SD-315 2SD-325 2SD-3330 | 80p 200p 280p 280p 280p 150p 260p 260p 260p 250p 195p 40p 75p 410p | 2SD-1163A 2 2SD-1164 2SD-1168 2SD-1168 2SD-1185 2SD-1186 2SD-1190 2SD-1196 2SD-1210 2SD-1210 2SD-1210 2SD-1225 2SD-1225 2SD-1225 2SD-1227 2SD-1227 2SD-1237 2SD-1237 | 120p 425p 280p 400p 125p 150p 50p 280p 120p 120p 2250p 270p | THYRISTORS (SCR's) 2N.5061 — 0.8A/60' 2N.5062 — 0.8A/100' 2N.5064 — 0.8A/200' C1060 — 4A/400' TIC116C — 8A/400' TIC116B — 8A/400' TIC116B — 12A/400' TIC126D — 12A/400' TIC126D — 12A/400' TIC126B — 12A/4 | V V V V V | 205 28p 29p 28p 59p 70p 79p 78p 94p 76p 37p | NV 430/NV 460 NV 730 4 HEAD NV 366 4 HEAD NV 180 PORTABLE 4 HEAD NV 370/NV 380 NV 788/NV 810 NV 850/NV 870 NVG 15 NVG 30 NVG 33, NVG 45, NVG 46 NVG 40, NVG 130 | £26.50 £21.00 £30.50 £30.50 £41.00 £43.50 £50.00 £41.50 £28.00 £41.00 £28.00 £28.00 £42.00 |
| ZN-426 260p ZN-427 550p ZN-427 550p ZN-428 425p ZN-438 340p ZN-438 510p ZN-438 510p ZN-134 1210p ZN-134 1210p ZN-134 210p ZN-134 210p ZN-134 210p ZN-134 210p ZN-134 50 640p ZN-134 210p ZN-134 50 640p ZN-134 50 50p ZN-234 50 50p ZN-234 50 50p ZSA-550 150p ZSA-550 150p ZSA-550 50p | 288-707 2009 288-718 70 258-718 70 258-727 2009 258-725 8009 258-725 8009 258-725 1009 258-725 1009 258-725 1009 258-725 1009 258-725 1009 258-725 1009 258-825 135 258-886 225 258-886 225 258-861 1009 258-1009 1109 258-1007 1809 1009 258-1007 1809 10 | D 25C-1819 2SC-1826 2SC-1826 2SC-1826 2SC-1827 2SC-1846 2SC-1846 2SC-1847 2SC-1855 2SC-1875 2SC-1875 2SC-1890 2SC-1990 2 | 140p 60p 120p 20p 100p 120p 150p 700p 260p 210p 45p 125p 30p 75p 250p 190p 60p | 2SC 2671 120p 2SC 2682 120p 2SC 2688 270p 2SC 2688 70p 2SC 2689 120p 2SC 2701 980p 2SC 2719 80p 2SC 2719 80p 2SC 2721 450p 2SC 2734 450p 2SC 2734 450p 2SC 2735 40p 2SC 2736 40p 2SC 2736 40p 2SC 2736 40p 2SC 2737 60p 2SC 250 | 2SD-348 2SD-357 2SD-358 2SD-371 2SD-380 2SD-381 2SD-388 2SD-388 2SD-401 2SD-401 2SD-401 2SD-415 2SD-427 2SD-426 2SD-427 2SD-438 2SD-427 2SD-468 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 2SD-471 | 480p 40p 40p 240p 850p 170p 90p 20p 120p 120p 120p 150p 350p 450p 45p 60p 25p 75p | 25D-1266 25D-1272 25D-1273 25D-1273 25D-1275 25D-1276 25D-1277 25D-1279 25D-1289 25D-1291 25D-1392 25D-1393 25D-1308 25D-1308 25D-1308 25D-1326 25D-1326 25D-1326 25D-1326 25D-1326 25D-1326 25D-1326 25D-1326 25D-1326 25D-1347 25D-1347 25D-1348 | 180p 180p 200p 100p 160p 200p 160p 300p 400p 60p 425p 140p 140p 140p 200p 70p | BR303 BT106 BT116 BT119 OT121 TIC44 TIC45 TIC47 17089 17127 1586H 1586H 1586H | * * * * * UNERS | 88-p 184-p 184-p 104-p 122-p 27-p 32-p 200-p 200-p 200-p 230-p 230-p 850-p | SANYO VTC 5000, VTC 5400, VTC 6000, VTC 6500 VTCM10/11/20/21/25/30/31/35/40/50 VTC 5100, VTC 5150, VTC 5300 VTC 5500/5370, VTCNX 10/15/20/30, VTC 5500 VTC 5100, VTC 5150, VTC 5300 VTC 9100/930/9455/9500 VTC 9100/930/955 VTC 5500 | £28.00 £28.00 £28.00 £28.00 £30.50 £30.50 £30.50 |
| 2SA-603 100p 2SA-606 300p 2SA-608 15p 2SA-634 50p 2SA-634 50p 2SA-636 40 60p 2SA-673 20p 2SA-684 60p 2SA-689 100p 2SA-7108 300p 2SA-710 80p 2SA-726 80p 2SA-726 80p 2SA-726 20p 2SA-726 20p | 2SC-380 20 2SC-382 120 2SC-382A 60 2SC-454 45; 2SC-460 10; 2SC-461 30; 2SC-495 60; 2SC-515A 100; 2SC-536 20; 2SC-536 120; 2SC-563 120; 2SC-647 300 | p 2SC-1941 2SC-1942 2SC-1945 p 2SC-1946 p 2SC-1946 1 2SC-1947 2SC-1959 p 2SC-1959 p 2SC-1970 p 2SC-1970 p 2SC-1971 p 2SC-1971 p 2SC-1972 p 2SC-1973 | 110p 40p 190p 350p 350p 500p 450p 70p 20p 160p 200p 400p 600p 150p | 2SC 2812 40p 2SC 2814 40p 2SC 2834 40op 2SC 2839 360p 2SC 2853 70p 2SC 2857 120p 2SC 2877 120p 2SC 2878 40op 2SC 2898 40op 2SC 2898 40op 2SC 2812 120p 2SC 2811 120p 2SC 2811 120p | 2SD-526 2SD-545 2SD-549 2SD-551 2SD-655 2SD-660 2SD-571 2SD-600 2SD-601 2SD-602 2SD-612 2SD-613 2SD-636 2SD-636 | 70p 60p 120p 400p 500p 150p 80p 530p 80p 40p 60p 100p 70p 30p | 2SD-1379 2SD-1380 2SD-1383 2SD-1390 2SD-1391 2SD-1392 2SD-1395 2SD-1396 2SD-1397 2SD-1398 2SD-1399 2SD-1400 2SD-1402 | 125p 100p 100p 100p 150p 450p 150p 240p 250p 210p 300p 280p 280p 120p | * U322LO * U322LO * U342 * * * * * * * * * VIDEO LAMPS UNIVERSAL VIDEO LAMPS 12V 50 mA (300mm WIRES) RED OR BLUE VIDEO LAMP FOR PANASO | | 600p * 500p * 500p * * * * * * * * * * * * * * * * * * * | SHARP VC 381, VC 383, VC 386, VC 387, VC 388, VC 483 VC 486, VC 3300, VC 8381, VC 9100, VC 9300, VC 9500, VC 9700, VC 582, VC 583, VC 651, VC 681, VC 781 | £19.00 |
| 2SA-733 30p 2SA-7474 600p 2SA-748 50p 2SA-748 90p 2SA-769 130p 2SA-771 130p 2SA-771 150p 2SA-781 150p 2SA-784 170p 2SA-844 30p 2SA-8472 40p | 2SC-681 340/ 2SC 683 120/ 2SC-710 20/ 2SC-711 40/ 2SC-732 40/ 2SC-733 25/ 2SC-733 25/ 2SC-761 150/ 2SC-783 105/ 2SC-783 105/ 2SC-790 8380/ | P 2SC-1984 P 2SC-1985 P 2SC-1986 P 2SC-2001 P 2SC-2002 P 2SC-2003 P 2SC-2004 P 2SC-2021 P 2SC-2022 P 2SC-2023 P 2SC-2023 | 150p 120p 160p 60p 40p 25p 60p 40p 200p 180p 60p | 2SC-2928 550p 2SC-2929 280p 2SC-2949 320p 2SC-2968 280p 2SC-2968 280p 2SC-3019 300p 2SC-3019 300p 2SC-3026 550p 2SC-3026 550p 2SC-3030 400p 2SC-3030 400p | 2SD-638 2SD-639 2SD-640 2SD-655 2SD-661 2SD-666 2SD-666 2SD-668 2SD-669 2SD-673 | 60p 60p 350p 50p 60p 70p 70p 120p 40p 350p | 2SD-1407 2SD-1409 2SD-1415 2SD-1425 2SD-1426 2SD-1427 2SD-1428 2SD-1429 2SD-1430 2SD-1431 2SD-1432 | 160p 190p 190p 430p 350p 380p 450p 410p 280p 400p 600p | CASSETTE DC MO' 6V 9V 12V CW 12V CCW 13.2V CW | | 240p 240p 240p 240p 290p | SONY DSR-35R (FOR C20, 30, 40 SLF1, SLF1E) DSR-43R (FOR SLC7 RANGE SL 5000, SL 5100, SL 3000) | SLF1UB, £19.00 £16.50 |
| 2SA-872A 50p 2SA-889 90p 2SA-899 60p 2SA-907 650p 2SA-913 200p 2SA-913 200p 2SA-913 50p 2SA-921 50p 2SA-921 40p 2SA-934 40p | 2SC-828 25 2SC-829 20 2SC-839 25 2SC-867A 150 2SC-930 20 2SC-941 25 2SC-943 160 2SC-944 140 2SC-945 20 2SC-950 40 | P 2SC-2027 P 2SC-2028 P 2SC-2028 P 2SC-2059 P 2SC-2055 P 2SC-2056 P 2SC-2058 P 2SC-2060 P 2SC-2060 P 2SC-2060 | 450p 75p 120p 120p 150p 450p 40p 60p 90p | 2SC-3042 300p 2SC-3060 900p 2SC-3057 150p 2SC-3076 60p 120p 2SC-3077 120p 2SC-3114 40p 2SC-3130 100p 2SC-31348 410p | 2SD-676 2SD-716 2SD-717 2SD 718 2SD 722 2SD-725 2SD-734 2SD-741 2SD-743 2SD-756 | 250p 115p 180p 100p 240p 400p 60p 120p 130p 100p | 2SD-1433 2SD-1438 2SD-1439 2SD-1441 2SD-1448 2SD-1450 2SD-1451 2SD-1453 2SD-1455 2SD-1457 | 750p 140p 320p 440p 140p 60p 260p 170p 320p 220p | CASSETTE T | * * * * * FAPE HEADS * * * * * | 290p * * * * * * * 90p | | £22.00 |
| 28A-935 40p 28A-935 40p 28A-935 140p 28A-930 28p 28A-950 28p 28A-950 50p 28A-955 50p 28A-956 70p 28A-956 70p 28A-956 70p 28A-965 70p 28A-968 70p 28A-969 70p | 25C-983 | 2SC-2073 2SC-2075 2SC-2078 2SC-2081 2SC-2086 2SC-2120 2SC-2120 2SC-2131 2SC-2141 2SC-2168 2SC-2168 2SC-2168 2SC-2168 2SC-2199 | 70p 80p 95p 950p 100p 60p 50p 550p 150p 80p 175p 600p | 25C-3149 180p 25C-3150 200p 25C-3151 230p 25C-3152 250p 25C-3153 250p 25C-3156 400p 25C-3156 260p 25C-3159 200p 25C-3159 200p 25C-3159 340p 25C-3175 340p 25C-3178 340p | 2SD-757 2SD-758 2SD-762 2SD-763 2SD-768 2SD-773 2SD-773 2SD-774 2SD-777 2SD-784 2SD-786 2SD-788 | 120p 140p 140p 140p 140p 200p 40p 60p 400p 650p 100p | 2SD-1459 2SD-1468 2SD-1496 2SD-1497 2SD-1505 2SD-1554 2SD-1555 2SD-1576 2SD-1577 2SD-1579 2SD-1591 2SD-1595 | 120p 60p 450p 450p 120p 500p 450p 450p 450p 120p 310p 160p 200p | STEREO HEAD MINI HEAD AUTO REVERSE HEAD * * * * * * * UNIVERSAL "RIPLERS SONY ON/OFF SWITCHES PHILIPS SWITCHES K30, K35, K40, KT3, KT4 * * * * * | * * * * * | 150p 230p 260p * * * 450p 200p 150p | GRANDATA LT FOR ADDRESS & PH PLEASE TURN OVER | ONE |

| THE REAL PROPERTY. | | TELLIFICATION STRICK | A STATE OF THE STATE OF | Marin Marin | ويد كالشاهر والدوارة | |
|--|---|--|--|---|---|---|
| VCR | FERGUSON | VIDEO MOTORS | 4000B SERIES | 74 SERIES | 74HC251 25p 74LS114 28p | 8255 200p 75188 55p |
| PINCHROLLERS | | AMSTRAD | CMOS IC's 4000 13p | 7400 20p 7401 16p | 74HC253 36p 74LS122 35p 74HC257 40p 74LS123 35p | 8256 1200p 75189 55p |
| AKAI | 3292, 3V00, 3V01 150p 3V16, 3V22, | VCR-7000 REEL MOTOR 1700p | 4001 13p | 7402 18p | 74HC258 50p 74LS124 85p 74HC259 52p 74LS125 30p | 8259 280p 75451 40p |
| VS9300, VS9500, VS9700, | 3V23 65p 3V29/30 120p | FERGUSON & JVC | 4006 34p | 7404 35 p | 74HC273 42p 74LS126 30p 74HC279 35p 74LS132 30p | 8271 3400p 75454 66p 8272 1200p 75492 55p |
| VS9800 280p VS1, VS2, VS3, VS4, VS5, VS6. | 3V31/32 85p | CAPSTAN MOTOR 2100p | 4007 13p 4008 38p | 7405 10p 7406 36p | 74HC280 61p 74LS133 30p 74HC283 61p 74LS136 30p | 8279 270p 8T26 95p 8282 300p 8T28 110p |
| VS9, VS10 360p | 3V35/36 80p 3V38-39 80p | PU-45979 CAPSTAN MOTOR 1950p | 4009 20p 4010 21p | 7407 36p 7408 25p | 74HC298 50p 74LS138 28p 74HC299 105p 74LS139 28p | 8283 400p |
| AMSTRAD | 3V42/43 65p 3V44/45 65p | PU-55371V DRUM MOTOR 1950p | 4011 13 p | 7409 20p 7413 30p | 74HC354 38p 74LS145 65p 74HC356 48p 74LS147 90p | 8284 440p 8287 380p OPTO |
| VCR4500, VCR4600, VCR4600 | 3V45/54 65p | PU-46414 | 4012 13p 4013 19p | 7414 45 p | 74HC365 34p 74LS148 75p 74HC366 36p 74LS151 27p | 8288 650p COUPLERS |
| Mk2, VCR4700 280p VCR5200 360p | 3V55 65 p | REEL MOTOR PU-51381V 2650 p | 4014 32 p 4016 18 p | 7417 32p | 74HC367 36p 74LS153 31p 74HC368 36p 74LS154 78p | 8755 1400 p AY3-1015 290 p |
| VCR7000 360p | FISHER | NATIONAL | 4017 29p 4018 30p | 7421 25p | 74HC373 48p 74LS155 36p 74HC374 48p 74LS156 36p 74HC375 52p 74LS157 22p | SP0256AL2 500p 4N25 50p |
| FERGUSON | 11011211 | REEL MOTOR 1350p | 4019 28p | 7425 15p 7430 25p | 74HC375 52p 74LS157 22p 74HC377 52p 74LS158 27p 74HC386 20p 74LS160 38p | Z80ACPU 150p 4N26 50p Z80BCPU 400p 4N27 50p |
| 3V00, 3V16, 3V22, 3V23 280p 3V29-30, 3V31-32 280p | VBS-7000 245p | MYN-135V5L FOR NV333, NV366 | 4020 33p 4021 36p | 7437 28p 7438 32p | 74HC390 50p 74LS161 38p 74HC393 47p 74LS162 38p | Z80ADMA 500p 4N28 50p Z80AP10 220p 4N29 50p |
| 3V35-36, 3V38-39, 3V42-43, | VBS-9000 120p | SANYO | 4022 36p 4023 13p | 7442 38p 7447 60p | 74HC423 65p 74LS163 36p 74HC533 65p 74LS164 36p | Z80BP10 340p 4N30 90p |
| 3V53, 3V54-55, 3V56-57, 3V58-59, | | REEL MOTOR 700p | 4024 25 p 4025 13 p | 7450 22 p 7451 10 p | 74HC534 61p 74LS165 50p 74HC540 70p 74LS166 55p | Z80BCTC 320p 4N32 100p |
| 3V64-65, FV10-11, FV12-14 | HITACHI | 4-529V-10800 SHARP | 4026 60p | 7454 25 p 7470 30 p | 74HC541 70 p 74LS168 60 p 74HC563 60 p 74LS169 55 p | Z80AS10 460p 4N33 100p Z80AS10-1 580p 4N36 58p |
| HITACHI VT11, VT33 280 p | VT-11, VT-33 100 p | DEEL MOTOR | 4028 29p | 7473 25 p 7474 35 p | 74HC564 80p 74LS170 68p 74HC573 68p 74LS174 30p 74HC574 65p 74LS175 32p | Z80BP10-2 580 p 4N37 58 p Z80ADART 500 p 4N38 58 p |
| VT61-62, VT63-64, VT65, | VT-5000 120p | RMTOV 1008 GEZZ | 4029 34p 4030 17p | 7475 25p 7481 90p | 74HC574 65p 74LS175 32p 74HC583 90p 74LS190 47p 74HC595 85p 74LS191 43p | 74S289 18Op 74S387 20Op |
| VT86-88, 280p VT110-122, VT120-128, VT130-135. | VT-5500 130p VT-8000 60p | SONY | 4031 90p 4032 52p | 7482 60p 7485 28p | 74HC597 80p 74LS192 41p 74HC620 110p 74LS193 41p | 75107 65p LED DISPLAYS |
| VT138-150, VT168,-220 | VT-8500 60p VT-9300 50p | CAPSTAN MOTOR 700p A 6751131A FOR SLC6 | 4033 60p 4034 76p | 7486 28p 7489 75p | 74HC623 110p 74LS194 41p 74HC640 90p 74LS195 44p | 75113 100p |
| VT5000, VT8000, VT9300, VT9500 280 p | VT-9500 50p VT-9700 60p | CAPSTAN MOTOR 2500p BHF 1100D FOR SLC7 | 4035 42p 4036 180p | 7490 35 p 7492 45 p | 74HC643 90p 74LS196 45p 74HC646 120p 74LS197 42p | 75122 110p 75150 95p MAN.72 115p |
| JVC | 5700 60р | VIDEO LAMPS | 4037 75p 4038 46p | 7493 35p 7495 48p | 74HC648 120p 74LS221 45p 74HC651 100p 74LS240 45p | 75154 100p MAN:74 115p 75162 700p MAN:4640 180p |
| HR3300, HR3330, HR3360, | JVC | VIDEO LAMPS UNIVERSAL 30p | 4039 180 p 4040 30 p | 7497 80p 74107 30p | 74HC652 100p 74LS241 42p 74HC670 75p 74LS242 43p | 75182 95p MAN.8910 230p 75183 95p DL.747 160p |
| HR3660, HR4100, HR7700 280 p HR7200, HR7330, HR7660, | | 12V60mA (300mm WIRES) PANASONIC VIDEO LAMPS 60p | 4041 36p 4042 30p | 74111 52p 74116 85p | 74HC688 80p 74LS243 50p 74HC690 110p 74LS244 40p 74HC691 110p 74LS245 40p | 73100 95p UL./4/ 160p |
| HR7610, HR7650, HR7655 280p HRD110, HRD111, HRD120, | HR-3300, HR-3330, 150 p | | 4043 36p 4044 36p | 74119 85 p | 74HC691 110p 74LS245 40p 74HC4002 25p 74LS247 40p 74HC4015 85p 74LS248 40p 74HC4016 75p 74LS249 70p | |
| HRD121, HRD140, HRD150 280p | HR-3360, HR-3660, HR-4100 180p | IDLERS & PULLEYS REPLACEMENTS | 4045 72p 4046 42p | 74123 20p | /4HC4U1/ 48p /4LS251 24p | |
| HRD160, HRD225, HRD455, HRD565, HRD725 | HR-7200 70p HR-7600 80p | HITACHI | 4047 45p 4048 27p | 74125 40p 74126 45p | 74HC4020 50p 74LS253 36p 74HC4022 40p 74LS256 52p | SOLDERING IRON |
| MITSUBISHI | HR-7610 95p | FF REW IDLER | 4049 18 p | 74132 42p 74141 55p | 74HC4024 34p 74LS257 32p 74HC4028 40p 74LS258 35p | ANTEX XS25W 240V Soldering Iron |
| HS200, HS300, HS301, HS302, | HR-7650 75p HR-7655 90p | 6886971 190p PLAY IDLER | 4051 38p | 74145 70p 74153 45p | 74HC4040 34p 74LS259 50p 74HC4049 38p 74LS260 30p | 240Vac 540p Spare Element for XS25W 240V 260p |
| HS303, HS304, HS310, 280 p HS320, HS700 | HR-7700 77p HRD-110, HRD-111, 100p | V-6861482 320 p | 4052 35p 4053 35p | 74155 45 p 74157 45 p | 74HC4050 38p 74LS266 22p 74HC4051 85p 74LS273 44p | ANTEX C15W 240V Soldering Iron 240Vcm 540o |
| NATIONAL | HRD-120, HRD-225 HRD-250, HRD-455, 100p | JVC | 4054 53p 4055 52p | 74160 50p 74164 50p | 74HC4052 85p 74LS279 33p 74HC4053 85p 74LS280 88p 74HC4059 85p 74LS283 51p | Spare Element for C15W 240V 260p |
| NV100, NV180, NV300, NV333, | HRD-565, HRD-566, HRD-725, | IDLER ASSEMBLY PU-47752 450p | 4056 52p 4060 40p | 74167 35 p 74173 50 p | 74HC4059 85p 74LS283 51p 74HC4060 33p 74LS290 26p 74HC4066 33p 74LS293 26p | |
| NV340, NV366, NV600, 280p NV777, NV788 | HRD-755 | TAKE UP IDLER PU-51402A 145p | 4063 52p 4066 20p | 74174 60p 74175 65p | 74HC4072 31p 74LS365 26p 74HC4075 26p 74LS366 31p | |
| NV230, NV370, NV430, NV460, | MITSHUBISHI | TAKE CLUTCH PU-5\$373 225p | 4067 120p 4068 13p | 74176 45 p 74180 50 p | 74HC4078 32p 74LS367 28p 74HC4094 50p 74LS368 30p | DE001 DE0010 |
| NV730, NV810, NV830, 280p NV850, NV870, NV890, NV2000, | | IDLER ARM | 4069 13p 4070 13p | 74182 45p 74192 40p | 74HC4316 100p 74LS373 45p 74HC4351 110p 74LS374 45p | DESOLDERING PUMP |
| NV2010, NV3000, NV7000, NV7200, NV7800, NV8600, | HS-200 200p | PU-55373-3-8 285p FAST FORWARD IDLER | 4071 13p 4072 13p | 74196 40p 74197 45p | 74HC4352 160p 74LS375 46p 74HC4510 120p 74LS390 42p | SOLDERING IRON |
| NV8610, NV8620, NVG14 | | PU-45896C 210p | 4073 13p 4075 13p | 74393 70 p | 74HC4511 70p 74LS393 37p 74HC4514 120p 74LS399 68p | ANTEX XS25W 240V Soldering Iron 240Vac 540p |
| NVG7, NVG10, NVG12, NVG18 360p | NATIONAL | NATIONAL IDLER 2000 | 4076 42p 4077 13p | 74HC SERIES HIGH SPEED | 74HC4515 120p 74LS629 95p 74HC4516 125p 74LS641 88p 74HC4518 55p 74LS642 105p | Spare Element for XS25W 240V 260p |
| NVG21, NVG25, NVH65 360p | | SANYO 200p | 4078 13p 4081 13p | CMOS 74HC00 14p | 74HC4518 55p 74LS642 105p 74HC4520 60p 74LS644 105p 74HC4538 75p 74LS645 105p | ANTEX C15W 240V Soldering Iron 240Vcm 540p |
| PHILIPS | NV-300 160p NV-333 135p | REEL PULLEY | 4082 13p 4085 36p | 74HC02 14p 74HC03 14p | 74HC4543 75p 74LS670 62p 74HC7266 75p 74LS674 310p | Spare Element for C15W 240V 260p |
| VR6460 280p SANYO | NV-777 100p | 143-0-662T-01201 520p | 4086 30p 4089 75p | 74HC04 15p 74HC08 18p | 74HC22106 580 p 74LS687 250 p 74HC40104 190 p | |
| VHR1100, VHR1300, VHR1500, | NV-3000 160p | SHARP | 4093 18p 4094 44p | 74HC10 20p 74HC11 14p | /4 Coloros 2 Sop | |
| VHR2300 360p | NV-7000 95p NV-7200 90p | NIDLO005 GEEZ 195p | 4095 58p 4098 50p | 74HC14 26p 74HC20 19p | 74LS SERIES 2114 200p LOW POWER 2532 330p SCHOTTKY 2716 200p | DESOLDERING PUMP |
| VTC5000, VTC5150, VTC5500, VTC9300, VTCM10, VTCM20 280p | NV 8600 160p | IDLER NIDL0006 GEEZ 195p | 4098 50p 4099 42p 4501 27p | 74HC20 19p 74HC21 20p 74HC27 20p | T.T.L 2716 200p 2732 280p 74i.S00 12p 2732A 300p | Desolder Pump 290p |
| SHARP | DHII IDC | SONY | 4501 27p 4502 36p 4503 30p | 74HC27 20p 74HC30 20p 74HC32 20p | 74LS01 12p 2764 240p 74LS02 12p 27C64 550p | Spare Nozzie 80p |
| VC381, VC386, VC2300, VC3300, VC7300, VC7300, VC7700, VCR300, 260 0 | PHILIPS | REW. PULLEY | 4503 30p 4504 55p 4505 180p | 74HC32 20p 74HC42 30p 74HC51 20p | 74LS03 12p 27128 350p 74LS04 12p 26256-25 400p | |
| VC7300, VC7700, VC8300 360p VC9100, VC9300, VC9500, VC9700 | VR-6460 170p | A-6706-348-B 400p REW. PULLEY | 4505 180p 4506 58p 4507 30p | 74HC73 24p 74HC74 24p | 74LS05 12p 41256-12 450p 74LS08 12p 256DRAM 450p | |
| VC387, VC481, VC482, VC483, VC486, VC496, VC581 360p | 1700 | A-6706-391-A/B 300p | 4508 67 p | 74HC75 28p | 74LS09 14p 4116 75p 74LS10 12p 4164 150p 74LS11 12p 6116 180p | SOLDER MOP 65p |
| VC582, VC583, VC585 | SANYO | SERVICE AIDS | 4511 30p | 74HC76 28p 74HC77 35p 74HC95 23p | 74LS11 12p 6116 180p 74LS12 12p 6264 400p 74LS13 20p 6502 300p | |
| VC651, VC681, VC685, VC750, VC780, VC781, VC785, | - | SERVISOL PRODUCTS | 4512 38p 4513 80p 4514 65p | 74HC85 33p 74HC86 29p 74HC93 50m | 74LS14 24p 6502A 400p 74LS15 14p 65C02 930p | |
| VC787 360p VC793, VCT72 | VTC-5000 75p | V. HEAD CLEANER 100p | 4515 65p | 74HC107 28p | 74LS20 14p 6503 570p 74LS21 14p 6520 170p | |
| SONY | VTC-5300 100p VTC-5500 95p | SWITCH CLEANER 115p | 4516 36 p 4517 100 p | 74HC109 28p 74HC112 28p | 74LS22 14p 6522 330p 74LS24 35p 6530 1050p | SOLDER |
| SLC5, SLC6, SLC7 360p | VTC-9300 220p | FREEZE IT 125p | 4518 36p 4519 28p | 74HC113 28p 74HC123 35p | 74LS26 14p 6532 460p 74LS27 14p 6545 880p | 18 SWG 500g 500p 20 SWG 500g 650p |
| SLC9, SLC20, SLC24, SLC30, SLC33, SLC44, SLHF100 360p | SHARP | FOAM CLEANER 120p ANTI-STATIC 120p | 4520 36p 4521 86p | 74HC125 32p 74HC126 33p | 74LS28 14p 6551 530p 74LS30 14p 6800 210p 74LS32 15p 6802 220p | . 5.1.5 5.509 |
| SLF1, SLF11, SLF25, SLF30, | SHARP | AEROKLEANE 100p AERO DUSTER 125p | 4522 43p 4526 38p | 74HC131 36p 74HC132 33p | 74LS33 15p 6803 800p 74LS31 15p 6808 500p | |
| SLF60, SLF100 | VC-381/383/386 125p | PLASTIC SEAL 115p | 4527 41p 4528 38p | 74HC133 33 p 74HC137 52 p | 74LS38 15p 6809 600p 74LS40 15p 6810 150p | |
| * * * * * * * * * * * * * * * * * * * | VC-6300 150p VC-7300/7700/7750 150p | If you purchase more | 4529 65p 4532 48p | 74HC138 33p 74HC139 22p | 74LS42 25p 6818 380p 74LS47 52p 6820 140p | SOLDERING IRON |
| * SOCKETS FOR TV TO VIDEO * * BLACK COLOUR 2 METRES * | VC-8300 150p | than one Servisol product postage will | 4551 75p 4553 140p | 74HC147 42p 74HC148 38p | 74LS48 48p 6821 140p 74LS51 13p 6840 310p | STAND |
| * LONG, ONLY £1 EACH + VAT * | VC-8381, VC-9100 125p VC-9300, VC-9500 135p | be £2.00 | 4555 29p 4556 36p | 74HC151 32p 74HC153 32p | 74LS54 13p 6845 620p 74LS55 15p 6850 110p 74LS73 24p 8080A 400p | Soldering Stand 200p Spare Sponge 40p |
| VCR BELT KITS | | ****** | 4557 140p 4583 60p | 74HC154 90p 74HC155 48p | 74LS73 | - wop |
| AKAI | SONY | * UNIVERSAL * | 4584 30p 4585 40p | 74HC157 34p 74HC158 34p | 74LS76 24p 8088 500p 74LS78 24p 8155 360p | |
| VP-7100 160 p | | * TRIPLERS * | 40100 120 p 40101 78 p | 74HC160 44p 74HC161 44p | 74LS83 37p 8156 360p 74LS86 37p 81LS95 120p | |
| VS-1 150 p | SL-C5, SL-C6 140p SC-C7 140p | ★ 450p ★ | 40102 150p 40103 120p | 74HC162 44p 74HC163 44p | 74LS86 25p 81LS96 130p 74LS90 26p 81LS97 130p | FLOPPY DISCS |
| VS-2EG 100p VS-4 120p | SC-C9 165p SL-8000-8080 200p | ***** | 40104 80p 40105 140p | 74HC164 44p 74HC165 56p | 74LS91 55p 81LS98 130p 74LS92 32p 8224 240p | 51/4 inch DSDD (10 in box) Branded Name 67.50 |
| VS-5EG 100p VS-9300 160p | 200р | ***** | 40106 35p 40107 50p | 74HC166 60p 74HC173 52p | 74LS93 26p 8226 240p 74LS95 41p 8228 270p 74LS96 52p 8243 250p | 5 ¹ /4 inch DSDD (bulk pack) 25 £10.00 |
| VS-9500 155 p | TOSHIBA | * SONY ON/OFF * | 40108 260p 40109 74p | 74HC174 38p 74HC175 38p | 74LS107 28p 8250 850p 74LS109 28p 8087 11000p | 31/2 inch DSDD (10 in box) Branded Name £13.00 |
| VS-9700 160p VS-9800 155p | | * SWITCHES * | 40110 170p 40114 180p | 74HC181 180p 74HC182 60p | 74LS112 28p 8251 270p 74LS113 28p 8253 230p | 3 inch CF2 Branded Name £2.40 3 inch CF2D Branded Name £3.00 |
| AMSTRAD | V-55/57 85p | ★ 200p ★ | 40117 180 p 40147 240 p | 74HC190 46p 74HC191 55p | PLEASE PHONE US FOR TYPE NOT | LISTED HERE AS WE ARE HOLDING |
| TVR-1-2-3 210p | V-5250/5280 230p V-5480 210p | ***** | 40160 55p 40161 55p | 74HC191 53p 74HC192 53p 74HC193 41p | 5000 ITEMS AND QUOTATIONS AF Please send 70p P&P and VAT at 159 | RE GIVEN FOR LARGE QUANTITIES. 6. Govt, Colleges, etc. Orders accepted. |
| VCR-4600 & Mk 2 210p VCR-4700 210p | V-5475 160p V-7540 160p | ***** | 40162 55p 40163 55p | 74HC194 48p 74HC195 48p | Components All valves are new and bo | se allow 7 days for delivery. All brand-new oxed. Prices quoted are subject to stock |
| VCR-5200 210p VCR-7000 80p | V-8600 150p V-9600 85p | * PHILIPS * | 40174 48p 40175 60p | 74HC221 80p 74HC237 50p | availability and may be changed without i | notice. |
| The state of the s | | * SWITCHES * | 40175 60p 40181 170p 40182 70p | 74HC237 50p 74HC238 55p 74HC240 48p | GRAND. | |
| PEE LIKEAIOON L | AGES FOR MORE | ★ 150p ★ | 40192 48p 40193 48p | 74HC241 47p 74HC242 55p | K.P. HOUSE, UNIT 15, POP SOUTHWAY, WEMBLEY, | IN COMMERCIAL CENTRE, MIDDLESEX, ENGLAND |
| GRANDA | TA BARGAINS | ★K30, K35, K40, KT3, KT4★ | 40193 48p 40194 58p 40208 240p | 74HC243 60p | Telephone: 01-900 2329 | Telex No: 932 885 (Sunmit) |
| CHIAND'S | JAHUAINO . | ****** | 40208 240p 40257 120p | 74HC244 44p 74HC245 48p | Access & Visa Card accepted | 903 6126 i. Open Monday to Saturday. |
| | | The state of the s | | | 1 | |

HOW TO INCREASE YOUR PROFITS, IMPROVE YOUR SERVICE, WITH COST EFFECTIVE TEST EQUIPMENT.

HAMEG OSCILLOSCOPES

HAMEG are Europe's top selling DUAL TRACE OSCILLOSCOPES. Select from four superb models. All, with he exception of the HM 1005, incorporates a useful COMPONENT TESTER. Size — all models — 285mm × 45mm × 380mm. Clear display 8 × 10cm. Mains supply: 110/125/220/240V AC 50/60Hz. All supplied with 2 PROBES, a COMPREHENSIVE MANUAL and a 2 YEAR WARRANTY.

HM203-6 20MHz STANDARD



SPECIFICATION

- SPECIFICATION

 * 2 Channels

 * Bandwidth: DC-20MHz

 * Sens: Ch1.. Ch2., 2mV/cm

 * Timebase: 0.2s-20ns/cm

 * Triggering: DC-40MHz

 * Active TV-Sync-Separator

 * Variable hold-off

- Trigger LED Indicator
 Calibrator: 1KHz Square wave
- * Plus many features

Price £314 00 + £47.10 V.A.T.

FREE Securicor Delivery

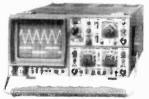
SPECIFICATION

- * 2 Channels * Bandwidth: DC-60MHz * Sens. Ch1., Ch2., 1mV * Timebase: 2.5s-5ns/cm

- Timebase: 2.5s-5ns/cm
 Triggening DC-80MHz
 Active TV-Sync-Separator
 After delay trigger
 Sweep delay: **Delay line
 Trigger LED indicator
 Calibrator: IKHz & IMHz Sq. Wave
 Component tester
- * Plus many more superb features



HM604 60MHz UNIVERSAL



FREE Securicor Delivery

HM1005 100MHz UNIVERSAL

0 B. W. 14 . 45 Sans

SPECIFICATION

3 CHANNELS-UP TO 6 TRACES

- SPECIFICATION

 * 3 Channels

 * Bandwidth: DC-100MHz

 * Sens. Ch1 , Ch2 , Ch3 , 1mV/cm

 * Timebase A , 2 55-5ns.cm

 * Timebase B 0.25-5ns.cm

 * Triggening DC-130MHz

 * After delay trigger * Delay line

 * Trigger LED indicator

 * Overescan LED indicator

 * Active TV-Sync-Separator

 * Calibrator 1KHz & 1MHz Sq. Wave

 * Plus many more excellent features

 IEE Securicor Delivers

Price £726.00 + £108.90 V.A.T. **FREE Securicor Delivery**

- **SPECIFICATION**

 ** Digital Storage

 ** Analogue real time (Same as 203-6)

 ** Bandwidth: DC-20MHz

 ** Sens: Ch1. Ch2., 2mVrcm

 ** Timebase Digital: 5s-2µs.cm

 ** Timebase Digital: 5s-2µs.cm

 ** Tinggening DC-40MHz

 ** Active TV-Sync-Separator

 ** Max sampling: rate: 2x-SMHz

 ** Memory: 2x-1024x8 Bit

 ** Dot joiner

 ** Printer/plotter output

 ** Component tester

Price £527.00 + £79.05 V.A.T.

HM205-2 20MHz DIGITAL STORAGE

15 90171

FREE Securicor Delivery

B K 's CRT TESTER-REJUVENATOR

Tests and rejuvenates blue, green & red guns separately. Fitted with delta and P.I.L. sockets. Compact size 120×65×60 mm. Supply 240V AC

Price £32.00 + £4.80 V.A.T.

B & K PRECISION CRT ANALYSER-RESTORER

The number one CRT Test Instrument. Over 5000 U.K. Television engineers wouldn't be without it.

wouldn't be without it.

All CRT's checked identically including all in-line and one gun types. Tests all three guns of colour CRT's simultaneously under actual operating conditions (model 467). Exclusive multiplex technique (model 467). Measures true dynamic bearn current that actually passes through G1 aperture to screen. Measures shorts and leaks — preserving more CRT's. Tests focus electrodes lead continuity finding faults that other Testers miss. Uses most powerful restoration method known with minimum danger to CRT. Rejuvenated CRT's guaranteed as new for two years. Obsolescence proof: Perpetual set up chart up-dated and new adaptors development. Tests and rejuvenates VDU's and Oscilloscope tubes. A range of over 40 CRT base adaptors available. Increases profit. Pays for itself in months.

Model 467 Tri-dynamic three meter instrument Inc. 6 common adaptors Without adaptors
Model 470 Single meter instrument Inc. 6 common adaptors.

Technical leaflets available. GET INTO PROFIT NOW!

.£395.00 + £59.25 V.A.T. £344.00 + £51.60 V.A.T. £294.00 + £44.10 V.A.T.

£244.00 + £36.60 V.A.T.

SADELTA FIELD STRENGTH METER TC-402

THE SADELTA FIELD STRENGTH METER TC-402 has been designed to measure the signal levels delivered by the antenna to a TV or FM receiver, in order to test the performance of the antenna and evaluate the best conditions during installation etc. To facilitate measurements, the tuning frequency readout is shown on a digital display

FEATURES

- ★ Covering FM and all TV bands (UHF/VHF) including CATV freq.
- Digital tuning display (3 digits) for direct frequency readout.
- * Accurate 10 turn tuning potentiometer.
- * Built-in loudspeaker enables monitoring of sound in AM/FM.
- Meter measurement in voltage and dB from $20\mu V$ (26dB/ μV)
- Continuity tester 0-500 ohms.
- * Fully portable (battery).
- * Sturdy carry case.

Price £249.00 + £37.35 V.A.T.



SADELTA COLOUR PATTERN GENERATORS
THE SADELTA RANGE OF HAND HELD COLOUR PATTERN GENERATORS is intended for use in production, installation and service of both colour and monochrorine TV sets video and computer monitors. This order to carriot fand adjust the various parameters eight switchable patterns are provided. The technician has ready access to Laboratory, workshop and field use as the Generator has been designed using the latest micro-technology to achieve truly pocket iments. Internal re-chargeable Ni-Cd's. Supplied with 9V power supply charge

T.W. PATTERN GENERATOR PAL MC11B UK Eand IV (21-34) Eand III (5-12) O/Put 10mV into 75ohms Sound output

* PAt 1

Price £124.95 + £18.74 V.A.T.

PAL VIDEO COMPOSITE GENERATOR

- PAL B.G.1.
 ★ Audio O/Put 10mV
 ★ D/Put 1V p.p. (# 75ohms ★ Switching 12V (# 4K7ohms)

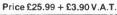
Price £124.95 + £18.74 V.A.T.

R.G.B. PATTERN GENERATOR

- O/Put sigs. Pos.RGB
 Neg. Composite
 O/Put TTL 5V P-P
 Blank Pulse etc CCIR
 - Price £111.95 + £16.79 V.A.T.

B.K.'s REVOLUTIONARY DYNAMIC 'LOPT' TESTER

Revolutionary L.O.P.T. tester. Operates in dynamic mode which actually tests the L.O.P.T. under high voltage conditions without de-soldering or removal. Size 75×100×40 mm. Supply 240V AC





- THANDAR SC110A PORTABLE OSCILLOSCOPE Full trg. fac. inc. TV frame etc.
 Only 2½" thick Battery or mains adaptor
 - Ø Ø Ø
 - . Fits in a brief case.
 - Sens. 10mV Bandwidth 10MHz
- * Size 255mm x 148mm x 50mm

ACCESSORIES

Carry Case £6.25 + £0 93 V.A.T Probe £7 50 + £1.30 V.A.T. Mains Adaptor £7 30 + £1.09 V.A T

Price £195.00 + £29.25 V.A.T.

DIGITAL LCR METER

- LCD Display 18 Ranges
- Inductance 1µH-2H
- Capacitance 1pf 200µf Resistance 1 ohm – 20Mohm
- High acuracy

Price £95.00 + £14.25 V.A.T.





INSULATION TESTER 500V Electronic battery operated Measuring Voltage

- 500V DC Measuring Range 0-100Mohm
- * Centre scale 2Mohm

Price £65.00 + £9.75 V.A.T.



U.K. POST PAID, export enquiries welcome. Visa/Access or cheque with order, payable B.K. Electronics. Official Orders welcome from Govt. Depts. Colleges, P.L.C. 's etc. Large S.A.E. for technical leaflets of complete range Delivery normally within seven days



- * Pocket Size -50°C to + 750°C
- 1°C Resolution * 0.5" LCD
- * Supplied with
- Price £59.50 + £8.92 V.A.T.

DIGITAL THERMOMETER



- 200MHz DIG. FREQ. METER * Pocket Size * 8 Dig. LED
 - Display * Freq. Range 20Hz to 200MHz
 - Resolution 0.1Hz Sensitivity 10mV

Price £75.50 + £11.32 V.A.T.



DIGITAL CAPACITANCE METER ★ High Accuracy ★ 8 Ranges

- ★ 0-1pf-2,000uf
- ★ Accuracy ±0.5% ★ Full scale ±1 digit Case included

£38.00 + £5.70 VAT

The THANDAR TP1 LOGIC PROBE and TP2 LOGIC **PULSER** are effective and economical tools for checking both TTL and CMOS circuits. TP1 can show 14 different circuit conditions and can detect pulses down to typicall Price £23.00

10ns. TP2 can inject a signal directly into a circuit without damaging sensitive components. Together they can

+ £3.45 V.A.T. stimulate and monitor responses of components in





ESSEX, \$52 6TR TEL: 0702-527572

. V. TUBES

104 ABBEY STREET, ACCRINGTON, LANCS Tel: 0254 36521/32611/390936 BB5 1EE. Telex: 635562 Griffin G (For P.V.) Fax No. Partners S. & B. Cucknell

0254 395361

15.85 16.50

13.95





HOW TO ORDER
Up to 1K ADD £1.00 per order P+P (U.K.). Heavier parcels e.g. cable, service aids, degausing cable, service aids, degausing coils please allow £3.25 P+P (U.K.). Export orders charged at cost. First Class Mail is used whenever possible. Add 15% VAT to total except where it states zero rate. Bulkier items will be sent by carrier £8.50 + VAT up to 25K

(except tubes). We do not despatch on Saturdays

THERE IS VAT ON P+P.

BOOKS AND MANUALS ARE ZERO V.A.T. BOOKS AND MANUALS ARE ZERO V.A.T. Goods are desplatched on the day we receive your order. If for any reason we are out of stock we will try to inform you as quickly as possible. We try our best to give a speedy, fair and efficient service. V.A.T. invoice on request. Give us a ring — we'll give you service. Please ask if what you need is not listed — we will try to help. Prices are subject to change without notice. In some cases we may have to supply an equivalent. We need expiry dates for credit card orders. MINIMUM ORDER \$\frac{\pi}{2}\$.

WE HAVE TRIPLERS, LOPTX, PUSH BUTTON ASSY CRTs, CAPACITORS, RESISTORS, POTS, FUSES, DROPPERS, STYLI, LEADS, CABLES, etc. ASK US

10.44

5.25

6.75

16.95

1.35

2.58

INTEGRATED CIRCUITS

LMG121ROP LMI889 . .. MAB8049 .

MAB8049 MC1488 MC1489AP ZX81 SPEC 48K ROM... OL ROM 256K OL ROM 128K TC74HC04 TMS1000 TMM23128P-1951 ULASCO01E (SPEC) ULA1305T ... Z80A CPU 2N7400E SN7438N 74LS00

74LS00 74LS32 74LS157

74LS132

8271 BBC UIO ULA 4164/4564-15 41256-15 6502 CDMMOODRE 6522 6264 COMMOODRE

6510 COMMODORE 6526 COMMODDRE 6561 COMMODORE

6581 COMMODORE 6589 COMMODORE 6581 COMMODORE 8580 COMMODORE 8501 COMMODORE 8501 COMMODORE 8701 COMMODORE 906114 PLA. COMM 901225 CHA ROM. COMM 901225 CHA ROM. COMM 2TX18278C182 2TX213 2TX213 2TX214 2TX313

NEW PRODUCTS

PHILIPS BACK UP BATTERIES

4 WAY TRAIL SOCKET WITH PLUG & CABLE

SOCKET KIT FOR TDA2600

3V38/39 LOWER DOOR FLAP .

ADAPTORS TO ALLOW BATTERY SMOKE ALARMS TO RUN DEF MAINS

MAINS SMOKE ALARM

9. 2.4V

RED MK4 REMOTE

ZTX551

ZTX650/1 ZTX750 IS 2472

901227

| SURPLUS C.R.T.'s | |
|-------------------|---------|
| WHILE STOCKS LAST | |
| A49/191X | 15.00 |
| 490DKB22 . | . 25.00 |
| A51/110X . | 15.00 |
| 'A51/510X | 25.00 |
| 5102B22 | . 25.08 |
| 5105KB22 | 25.80 |
| A51/161X | . 20.00 |
| A56/140X | . 15.00 |
| A56/500X | . 15.00 |
| | |

24hr. answering service

| | 10.0 |
|-------------------------|------|
| TAKE UP IDLERS/CLUTCH | |
| ASSY | |
| AKAI MI32773 | 5.6 |
| AKAI BV327815 | 4.8 |
| AMSTRA0 7000 | 2.2 |
| VHS gen THORN/JVC | 4.9 |
| FISHER 490400900 | 3.9 |
| FIG. 155 100 100000 100 | |

| AKAI MI32773 AKAI BW327815 4 AMSTRAO 7000 2 VYS gen THORNL/VC FISHER 490400900 3 FISHER 420400300 400 4 FISHER 420400300 400 4 FISHER 420400300 400 4 FISHER 420400300 400 4 FISHER 3209 FF FISHER 3000 FF FISHER 3000 FAKEUP FISHER 3000 | | 7001 | |
|--|---|-----------------------|--------|
| FERG 3V00 FAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 SPL CARR 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 869571 4 ANT PAN VXPO43 3 NAT PAN VXPO43 1 NAT PAN VXPO53 1 NAT PAN VXPO52 1 HAT PAN VXPO52 1 | | AKA1 MI32773 | 5.63 |
| FERG 3V00 FAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 SPL CARR 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 869571 4 ANT PAN VXPO43 3 NAT PAN VXPO43 1 NAT PAN VXPO53 1 NAT PAN VXPO52 1 HAT PAN VXPO52 1 | | AKAI BV327815 | 4.87 |
| FERG 3V00 FAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 SPL CARR 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 2 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 8869571 3 HITACHI 6F6 869571 4 ANT PAN VXPO43 3 NAT PAN VXPO43 1 NAT PAN VXPO53 1 NAT PAN VXPO52 1 HAT PAN VXPO52 1 | | AMSTRA0 7000 | 2.20 |
| FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 TAKEUP 8 FERG 3V35 SPL CARR 2 HITACHI 6413663 2 HITACHI 6414221 5 HITACHI 6414221 5 HITACHI 6861482 5 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 1 HITACHI 6861481 1 HITACHI 6861 | | VHS gen THORN/JVC | 4.95 |
| FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 TAKEUP 8 FERG 3V35 SPL CARR 2 HITACHI 6413663 2 HITACHI 6414221 5 HITACHI 6414221 5 HITACHI 6861482 5 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 1 HITACHI 6861481 1 HITACHI 6861 | | FISHER 490400900 | 3.95 |
| FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V00 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V16 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 4 FERG 3V22 TAKEUP 6 FERG 3V23 TAKEUP 5 FERG 3V23 TAKEUP 6 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V23 TAKEUP 7 FERG 3V35 TAKEUP 8 FERG 3V35 SPL CARR 2 HITACHI 6413663 2 HITACHI 6414221 5 HITACHI 6414221 5 HITACHI 6861482 5 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 7 HITACHI 6861482 1 HITACHI 6861481 1 HITACHI 6861 | | FISHER 420400300/400 | 4.50 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3292 F/F | 1.46 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V00 F/F | 1.46 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V00 TAKEUP | 4.95 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V00 TAKEUP late | 5.85 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V16 TAKEUP | 4.95 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V16 TAKEUP late | 5.85 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V22 TAKEUP | 4.95 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V22 TAKEUP late | 5.85 |
| FERG 3V29 TAKEUP IDL 1. FERG 3V29 TAKEUP IDL 1. FERG 3V35 SPL CARR 2. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3. FERG 3V35 SPL CARR 3 | | FERG 3V29 TAKEUP CL | 2.08 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO344 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | FERG 3V29 TAKEUP SPL | 2.13 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO344 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | FERG 3V29 TAKEUP IDL | 1.44 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO344 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | FERG 3V35 SPL CARR | 2.55 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO344 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI F/F 6886971 | 2,90 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO344 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI 6413663 | 2.68 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO444 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HfTACHI 6414221 | 5.84 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO444 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI 6383531 | 0.70 |
| HITACHI 6345173 0 HITACHI 6869671 2 HITACHI 6869671 2 HITACHI WIND ROLLER 0 NAT PAN VXPO463 3 NAT PAN VXPO434 1 NAT PAN VXPO401 1 NAT PAN VXPO444 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI 6861471 | 2.43 |
| HITACHI WIND ROLLER 0 NAT PAN VXPO453 3 NAT PAN VXPO453 1 NAT PAN VXPO451 1 NAT PAN VXPO451 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI 6861482 | 5.02 |
| HITACHI WIND ROLLER 0 NAT PAN VXPO453 3 NAT PAN VXPO453 1 NAT PAN VXPO451 1 NAT PAN VXPO451 1 NAT PAN VXPO341 1 NAT PAN VXPO351 1 NAT PAN VXPO551 4 | | HITACHI 6345173 | 0.40 |
| NAT PAN VXP0401 1 NAT PAN VXP0344 1 NAT PAN VXP0331 1 NAT PAN VXP0521 4 | | HITACHI 6886971 | 2.90 |
| NAT PAN VXP0401 1 NAT PAN VXP0344 1 NAT PAN VXP0331 1 NAT PAN VXP0521 4 | | HITACHI WINO ROLLER | 0.78 |
| NAT PAN VXP0401 1 NAT PAN VXP0344 1 NAT PAN VXP0331 1 NAT PAN VXP0521 4 | | NAT PAN VXP0463 | 3.20 |
| NAT PAN VXP0401 1 NAT PAN VXP0344 1 NAT PAN VXP0331 1 NAT PAN VXP0521 4 | | NAT PAN VXP0243 | 1.10 |
| NAT PAN VXPO344 1 NAT PAN VXPO331 1 NAT PAN VXPO351 4 NAT PAN VXPO521 4 NAT PAN VXPU33 5 SANYO RELU BRIVE PUL 5 SANYO 5000 RLR ASSY 1 SAMSUNG 1 SHARP 0005 2 SHARP 0006 2 SONY SLEST/3000 1 | | NAT PAN VXP0401 | 1.08 |
| NAT PAN VXPO331 1. NAT PAN VXPO521 4. NAT PAN VXPO521 5. NAT PAN VXPO533 5. SANVO REL DRIVE PUL 5. SANVO SOUD RLR ASSY 1. SAMSUNG 1. SHARP 0005 2. SHARP 0006 2. SONV SLC5770000 1. | | NAT PAN VXP0344 | 1.22 |
| NAT PAN VXPO521 | | NAT PAN VXP0331 | . 1.28 |
| NAT PAN YXPO433 | | NAT PAN VXP0521 | 4.08 |
| SANYO RELL DRIVE PUL 5 SANYO 5000 RLR ASSY 1 SAMSUNG 1 SHARP 0005 2 SHARP 0006 2 SONY SLC57/3000 1 | | NAT PAN VXP0433 | . 5.50 |
| SANYO 5000 RLR ASSY 1 SAMSUNG .1 SHARP 0005 .2 SHARP 0006 .2 SONY SLC5/7/3000 | | SANYO RELL DRIVE PUL | 5.10 |
| SAMSUNG 1 SHARP 0005 .2 SHARP 0006 .2 SONY SLC5/7/3000 .1 | 1 | SANYO 5000 RLR ASSY | 1.85 |
| SHARP 00052 SHARP 0006 | | SAMSUNG | 1.75 |
| SHARP 0006 | | SHARP 0005 | 2.20 |
| SONY SLC5/7/3000 | | SHARP 0006 | 2.20 |
| | | SUNY SLC5/7/3000 | 1.27 |

| WE HAVE A FULL RANGE OF MOTORS. | TYRES |
|---------------------------------|-------|
| BELT KITS, LAMPS etc IN STOCK. | |
| PLEASE ASK FOR CATALOGUE | |
| | |

| OFFERS | | | | |
|-------------------|--|--|--|-----|
| 9V CW MOTOR | | | | 3.5 |
| ASSTD SLIDER POTS | | | | 0.3 |
| ASK FOR VALVES | | | | |

LABGEAR

| CM1/201 | PU . | 12.39 |
|-------------|-----------------------------------|--------|
| CM7262 | PU | 13.50 |
| CM7065 | UHF/VHF HB | 16.18 |
| | UHF/HB | 14.74 |
| CM7268 | VHF H GAIN A/B/CD | 17.57 |
| CM7253 | | 15.81 |
| CM7243 | SECOND SET AMP | 14.73 |
| CM7093 | THREE SET AMP . | 18.55 |
| CM7063 | THREE SET AMP DIST.AMP VHF/UHF | 25.77 |
| CM7108/7298 | 8+1 DIST.AMP | 49.96 |
| CM9700 | 27MHz CB SUPPRESSOR . | . 4.90 |
| CM6011 | OUTDOOR SPLITTER | 8.63 |
| CM9003/00 | FLUSH SING.OUTLET | 1.95 |
| CM9003/01 | FLUSH SING.OUT.ISOLAT | 2.36 |
| CM9010 | FLUSH TWIN OUTLET . | 2.47 |
| CM9034 | UHF FILTERS A/B/CD | 8.89 |
| CM9033 | 6 WAY PASS SPLIT | 11.72 |
| CM7042 | TV GAMES COMBINER | 3.24 |
| CM9009 | FLUSH TV/FM EMULATOR | 3.88 |
| CM9006 | VHF/UHF DIPLEXER . | 4.17 |
| | TELEVERTA UP VHF TO UHF. | |
| CM7057 | TELEVERTA DOWN UHF/VHF | 49.73 |
| CM7294 | DIST AMP UHF/VHF | 24.96 |
| CM7274 | 4 WAY DIST.AMP | 26.15 |
| CM7082 | UHF/VHF DIST AMP | 74.15 |
| CM7080/10 | UHF MHA | 16.89 |
| CM7271 | UHF WIDEBANO 15 db | 9.09 |
| CM5004 | 4way VIDED DIST AMP | 68.20 |
| | | |

LARGEAR SATELLITE RANGE

| LADUL | III OMILLLIIL IIM | TUL |
|--------|--------------------------|--------|
| CM5188 | IF Intenm Dist Pump | 57.00 |
| CM5110 | IF Line Pump | 17.00 |
| CM5112 | Block Converter with PSU | 143.34 |
| | | |

| REMOTE CONTROLS | |
|-----------------------------------|------------|
| THORN/FERG TV 13.0 |)0 |
| THORN/FERG VIDEO | |
| 3V23 1R8817 14.9 |)5 |
| 3V31 IR8945 14.9 |)5 |
| 3V35 1R8946 14.9 |) 5 |
| 3V43 1R8947 19.1 | 12 |
| GRANADA UNIVERSAL 16.5 | 60 |
| PHILIPS | |
| G11 TXT IR8435 13.5 | i 0 |
| G11 TXT US31 BUTTON 29.4 | 12 |
| G11 NON TXT US8263 16.5 | i0 |
| G11 2 FUNC US8518 See Offers 16.5 | 60 |

PLUS MANY MANY MORE!!!

KT3/30 NON TXT IR8331 KT3/30 TXT IR8420

RC5 REPLACEMENT

| SATELLITE EQUIPMENT | |
|---------------------------|---------|
| SAKURA ASTRA SYSTEM | |
| incl. DISH/LNB RECEIVER | 199.00 |
| RG59 CABLE 100M | 19.95 |
| RG6 CABLE 100M | . 29.95 |
| 4 CORE POLAR CABLE | 10.50 |
| F CONN RG6 | 0.18 |
| F CONN RG59 | 0.24 |
| F CONN SCREW ON | 0.35 |
| FLINE CONN | 0.45 |
| CRIMPTOOL | . 29.95 |
| COMPASS | 6.00 |
| SAKURA STEREO SYSTEM | 229.00 |
| SIGNAL STRENGTH METER | . 53.92 |
| AND A COMPLETE RANGE OF A | ERIALS |
| AND ACCESSORIES ON PAGE | 23 IN |
| CATALOGUE | |

| | | _ (| ÆΙ | |
|------|-----|-----|----|--|
| ANTI | FEF | REN | CI | |

LOOP AFRIALS

ORION..

now in stock.

COAX CABLE \$540 100m.

CONTROL PANELS

SECURITY EQUIPMENT

SHORROCK ACORN PANEL

IR DETECTOR INTERNAL

817S SHORROCK

PHANTOM 240 PIR (Mains)

EXCELLENT VALUE CASTLE PETITE PANEL 5 Zone/Keypad operated

CASTLE OMEGA 5E 5 Zone/Keypad operated ...

Our new range of external security lighting/PIR is

PHANTOM SC Self Contained 240 PIR/Light with lov PHANTOM PC 240V Self Contained Courtesy Light which operates during hours of darkness 22.50

ORION 5 PIR with built in halogen flood light 60.00

plus all the extras you may need to fit a complete

WE STOCK CABLE, CLIPS, BELLS, BOXES, BATTERIES, SOUNDERS, BUZZERS, XENONS, CONTACTS, SMOKE ALARMS, TRUNKING,

PRESSURE MATS, FOIL BLOCKS.

| ANTIFERENCE | |
|------------------------------|--------|
| UNIVERSAL No. 1 CLAMP | . 1.3 |
| SB11 SPLITTER | . 2.5 |
| SB11 SPLITTER | . 3.94 |
| COB11 OUTLET | 0.9 |
| PU1240 POWER UNIT | |
| PU1300 MHA | 9.0 |
| 27 MHz FILTER | |
| DIPLEXERS | |
| MATCHED TRANSFORMER | . 2.8 |
| XS2 XTRASET | . 14.4 |
| XS04 4 WAY DA | |
| XS 4/6 | 43.13 |
| SUPER SET TOP AERIAL | 6.5 |
| CARATENNA AERIAL | |
| TRAVELLER AERIAL | . 11.5 |
| SILVER SENSOR AERIAL | 7.4 |
| XG8 HIGH GAIN AERIAL | . 21.0 |
| POWER SENSOR AERIAL WITH AMP | 24.9 |
| MERCURY SET TOP AERIAL | 2.3 |
| | |

MON-FRI 9am-5pm SAT

TRADE

OPEN

9am-4pm

GOOD NEWS!!

AVAILABLE AT THE TRADE COUNTER

WE NOW HAVE A CONTINUOUS SUPPLY OF REFURBISHED TVs AND VIDEOS

NEW STOCK DAILY

READY FOR RETAILING!!

ALL IN EXCELLENT CONDITION COMPLETE WITH REMOTES AND ALL TRIMS.

NO SCRATCHED CABINETS

VIDEOS HAVE OPERATING INSTRUCTION LEAFLETS TYPICAL EXAMPLES:

| | | VIDE | OS | |
|---|--------------------------|----------|------------------------------------|-------|
| ı | 3V29 etc. Top Loader | £86 | 3V35 etc. Front Loader with Remote | £128 |
| | Top Loader Stereo | 8812 | 3V44 Front Loader Remote | £128 |
| | | TV | 'S | |
| ı | 14" Portables, Standard | From £65 | Philips KT3, Remote | €81 |
| ĺ | Pye. Standard | . £69 | Pye K30, Remote, Text . | £112 |
| | Fidelity, Standard | £87 | 22", Standard, Toshiba . | £65 |
| ì | Ferguson, Standard | £79 | Decca, Remote 160 Series | \$108 |
| | Ferguson, Remote | £95 | Philips. Remote. Text. CTX | €139 |
| | Philips, Standard . | 290 | Ferguson TX100 Stereo. Remote Text | £113 |
| | 20" Decca Micro System . | £87 | Philips. Remote. K30 | £117 |
| | | | | |

AVAILABLE MID OCTOBER 21" & 24" FSTs

Please Ring for Availability

SOME P.V. FOR YOU

24.00

2.30

33.70



SUNSHINE FOR 1 MONTH ONLY

VIDEO HEADS

12.50 3HSSN 3HSSV 12.50

YES REALLY!!

WE ARE IN STOCK OF THESE AND MANY MORE TYPES. SEE CATALOGUE

| THESE OFFERS | | | | | |
|--|----------------------|------------|---------------|---------|-----------|
| 13A PLUG TOPS (10) FIG 8 MAINS LEADS E240 VIDEO TAPE | 3.75 0.50 2.20 | A34 14" | /510 . MON | 0 TUBES | 10.00 |

| WE ARE | SPECIA | LISTS IN | I COMPL | iter pai | RTS |
|--------|---------|----------|----------|----------|-----|
| AND HA | VE LOTS | OF GOO | THIES NO | EDED T | Λ |
| | | | | | |
| REPAIR | SPECTR | UMS AN | U LUMB | MUUUKE | 5. |

| THE PAINT OF ECT TORIO AND COMM | nobonie. |
|---------------------------------|----------|
| SPECTRUM 48K MEMBRANES | |
| ONLY | 1.35 |
| ULA . | . 6.50 |
| ROM . | 5.00 |
| SPEC PLUS MEMBRANES | |
| ONLY . | 4.50 |

REMOTE HAND SETS THORN TT31.... .. 9.50

THORN TT32 9.50 G112 FUNCTION . 9.50 GRUNDIG TP160/E 9.50 DECCA 101 (NON TXT) 10.00

TELEVISION WALL BRACKETS

| | Articulated TV Wall Bracket 12"-20" White (Loadbearing Cap. 36Kg) | 24.16 |
|---|---|-------|
| | P6045 DESIGNER TWISTER 12"-20" White (Loadbearing Cap. 36Kg) | 27.00 |
| ı | i (Loadbearing Cap. 36Kg) | 27.00 |

| P6041 LITTLE TWISTER Small, ideal for Bedroom/Kitchen |
|--|
| 14" White |
| (Loadbearing Cap. 16Kg) |

TEST METERS HT700 METER 20,000 R/v PHILIPS METER

| STATIONERY | | | |
|------------------------------|--|--|-----|
| SERVICE CALL PAD (100) | | | 1.9 |
| REPAIR TICKET (100) | | | 3.9 |
| JOB CARO (100) | | | 2.5 |
| RENTAL PAYMENT CARD (50) | | | 3.5 |
| MAINTENANCE AGREEMENTS (100) | | | 3.5 |

WE WELCOME ORDERS FROM SCHOOLS, COLLEGES AND GOVERNMENT INSTITUTIONS ON DEFICIAL REQUISITION.

FEW ONLY

3HSSH Hitachi 15.00 VT4000/4200 5000/5500 VIDEO HEADS

DISKS

GOLDSTAR 5.25" FLOPPY DISKS 2DD DS/OD (BOX 10) GOLDSTAR 31/2" DISKETTES HF2DD DS/DD (BOX 10) HP2DD DS/DD (BOX 10) HP3DADEO 31/2" DISKETTES DS/DD (BOX 10) Sharp Reel Drive Unit VID1200. 651, 682, 684, 685, 693,783 HT500 Pocket Meter 20 meter extension phone lead British Telecom Coupler HC90 High quality speaker cable 100m... . 8.30 7.70

DON'T FORGET

YOUR MAGIC WAND **DEGAUSSING** COILS

(STICK TYPE) 22.50

WE ARE THE MAIL ORDER SPECIALISTS AND WE TRY HARD TO STOCK ALL THAT WE ADVERTISE.

PLEASE RING US SHOULD YOU HAVE ANY SPECIAL REQUIREMENTS OR IF YOU NEED QUANTITY DISCOUNTS WE WILL ALWAYS TRY TO GIVE YOU PERSONAL AND FRIENDLY SERVICE

PHONE: (0254) 36521 - 390936 - 32611

SUPERVISION

NEW 'B' GRADE

| 100's of MONITOR STYLE COLOUR PORTABLES – BASIC/REMOTE/TEXT | From £40 |
|---|------------------|
| 100's of LATE FRONT LOADER VIDEOS (e.g. Sharp, Akai, Ferguson, NEC, Amstrad, Hitachi etc) | From £65 |
| 100's of VERY LATE F.S.T. TEXT or BASIC TV'S (e.g. Hitachi, Sony, Ferguson etc.) | From £60 |
| 100's of B/W PORTABLES – BATTERY/MAINS OPERATION | . From £5 |

EX-RENTAL STOCK

| 100's of TX9 & TX10 TEXT | From £55 |
|---------------------------------|------------------|
| 100's of 3V30 VIDEOS | From £65 |
| 100's of NON-THORN TV's | . From £5 |

All prices subject to VAT & quantity - handsets extra - subject to availability

SUPERVISION

UNIT 16, TOWER WORKS,

2 GLOBE ROAD, LEEDS LS11 5QG.
(off Water Lane, near Hilton Hotel (formerly Dragonara)

FAX NUMBER (0532) 425777

RING OUR HOTLINES NOW!

NORTH SOUTH

0532 01

444195 769 1029

ELECTRONIC COMPONENTS DISTRIBUTORS Tel: 01-952 4641 J.J. COMPONENTS Fax: 01-951 4924

| AC125 | 25p | 2SC984 | 45p | HA11720 | 280p |
|--------|--------------|------------------|-------|-----------|---------------|
| AC128 | 25p | 2SC1060 | 80p | BA308 | 130p |
| AC187 | 20g | 2SD187 | 45p | BA527 | 93p |
| AC188 | 20p | 2SD257 | 190p | TA7119 | 130p |
| AD166 | 275p | 2SD313 | 35p | TA7691 | 165p |
| AU113 | 205p | 2SD350 | 310p | | , |
| | | 2SD350 2SD365 | 48p | 4000 SERI | |
| BC107 | 7p | 2SD725 | 380p | 4000 | 12p |
| BC142 | 20p | | | 4010 | 20p |
| BC149 | 7p | 2SD525 | 60p | 4022 | 34p |
| BC153 | 7р | 2SD526 | 65p | 4027 | 15e |
| BC171 | 8p | 2SD837 | 70p | 4040 | 28p |
| BC179 | 10p | 2SD841 | 150p | 4503 | 28p |
| BC214 | 6р | MJE340 | 25p | 4511 | 28p |
| BC237 | 6р | MJE371 | 55p | 4516 | 34p |
| BC307 | Вр | MJE521 | 35p | | |
| BC327 | 7p | TL061 | 40p | 74LS SERI | |
| BC547 | 7p | TL064 | 80p | 74LS00 | 11p |
| BD137 | 20p | | | 74LS02 | 11p |
| BD244 | 48p | LINEAR IC's | | 74LS30 | 13p |
| BD677 | 36p | TBA120S | 45p | 74LS40 | 13p |
| BD901 | 48p | TBA530 | 100p | 74LS92 | 30p |
| BF450 | 18p | TBA560 | 110p | 74LS96 | 50p |
| BF493 | 16p | TBA800 | 40p | 74LS139 | 25p |
| BF506 | 200 | TBA920S | 110p | 74LS192 | 38p |
| BU104 | 80p | TBA1441 | 165p | 74LS247 | 35p |
| BU108A | 100p | TDA1180 | 180p | 74LS365 | 24p |
| BU120 | 90p | TDA1470 | 135p | 74LS669 | 55p |
| BU126 | 68p | TDA1670 | 280p | COMPUTER | |
| BU204 | 73p | TDA2575Q | 210p | | |
| BU208 | 68p | TDA2600 | 725p | 2114 | 18 0 p |
| BU208A | 70p | TDA3540 | 275p | 4116 | 70p |
| BU208D | 75p | TDA3650 | 285p | 81LS95 | 100p |
| | | TDA9503 | 235p | 81LS96 | 115p |
| BU308 | 80p | TCA240 | 180p | Z80ACPU | 135p |
| BU326A | 75p | | | VOLTAGE | REGUL |
| BU408 | 80p | TCA940 | 100p | 7805 | 32p |
| BU500 | 105p | TCA991 | 150p | 7806 | 32p |
| BU608 | 140p | STK4060 | 560p | 7808 | 32p |
| BU508A | 80p | STK5441 | 489p | 7810 | 30p |
| BU508D | 85p | STK5482 | 500p | 7812 | 33p |
| 8U806 | 68p | STK7404 | 672p | 7815 | 33p |
| BU908 | 110p | STK5471 | 475p | 7818 | 30p |
| BUX84 | 45p | STK7308 | 565p | 7905 | 33p |
| TIP31 | 20p | STR370 | 630p | 7910 | |
| TIP31A | 22p | STR441 | 460p | | 35p |
| TIP33 | 50p | STR451 | 470p | 7912 | 35p |
| TIP41 | 20p | STR1096 | 400p | 7918 | 35p |
| TIP41A | 20p | STR4090 | 625p | 79M15 | 35p |
| TIP42 | 20p | STR6020 | 480p | 78L12 | 25p |
| TIP110 | 45p | STR40090 | 590p | LM-317SP | 55 p |
| 2SA473 | 33p | STR50103A | 580p | 78L15 | 25p |
| 2SA678 | 28p | UPC574 | 50p | IC SOCKET | S |
| 2SA715 | 75p | UPC1023H | 50p | 8pin | 5p |
| 2SA887 | 45p | UPC1161C | 140p | 14pin | 6p |
| 2SA979 | 80p | UPC1197C | 1200 | 16pm | 8p |
| 2SB558 | 160p | UPC1382C | 110p | 18pm | 10p |
| 2SB507 | 90p | UPC1391H | 110p | 20pin | 12p |
| 2SB595 | 70p | HA1137W | 133p | 24pm | 15p |
| 2SB631 | 70p | HA1196 | 150p | 28pin | 18p |
| 2SC372 | | HA11235 | 155p | 40pin | 20p |
| 236372 | 3 0 p | 13411233 | thort | -торит | Zuh |

| 280p 130p 93p 130p 165p 12p 20p 34p 15p 28p | LED's 3mm R,G,Y 5mm R,G,Y DIODES IN4001 IN4002 IN4003 IN4004 IN5401 IN5402 IN5408 | 8p 9p 3p 4p 3p 4p 8p 8p 10p | VIDEO HEADS JVC PI NO PU31332C10 JVC PI NO PU31332L PANASONIC: 0103 PANASONIC: PI NC 0121 PANASONIC: PI NC 0171 SHARP PI NO DDRMU 002 001 | 1320p 1320p 1320p 1320p 1320p 1425p 1720p 1740p |
|--|---|---|---|--|
| 28p 28p 34p 11p 11p 13p 13p 30p | CRYSTALS 1MHz 2MHz 3.5795MHz 4.43MHz 6MHz 12MHz | 220p 180p 90p 90p 100p 108p | PINCH RGLLERS AKAI VS1-5 AKAI 9300/9800 NATIONAL G10. NV300-370 We also stock all types of tors, IC's, video heads, b pinch rollers, lidlers, lamps | elt kits, |
| 50p 25p 38p 35p 24p 55p C's 180p 70p 115p 135p GUL 32p 32p 32p | VIDEO BELT VS2EG FERGUSDN 3292 3V00 3V24 3V29 HITACHI VT11 VT3000 VT8500 VT9300 JVC HR2200 | 90p 140p 140p 63p 100p 90p 140p 50p 45p | Please phone u the best price save money. UNIVERSAL TRIPLERS 9000 Triplers TX10 Focus Unit Sony on/off switches Fuses 30mm quick blow a 100 at 6 | 480p 880p 725p 220p iss. p each. |
| 30p 33p 33p 30p 33p | HR3330 HR4100 HR7650 HR7700 | 140p 168p 59p 65p | phone call aw Just try us. | ay. |
| 35p 35p 35p 35p 25p | & packing & to availability | then ad y, and es, Scho | types not listed. Flease add 6 d 15% VAT to total. All items prices can change without pols & Institutes orders accel and new. | subject notice. |
| 55p 25p 5p | (auxea | Acce | t Enquiries Welcome ess & Visa Accepted | |
| 6p 8p 10p 12p 15p 18p 20p | TEL: 01- | CHA HA8 952 | ASE, EDGWARE, N 5DN. ENGLAND 4641. FAX: 01-95 Y APPOINTMENT | 1 4924 |

MAKE YOUR INTERESTS PAY!

Train at home for one of these Career Opportunities

More than 8 million students throughout the world have found it worth their while! An ICS home-study course can help you get a better job, make more money and have more fun out of life! ICS has over 90 years experience in home-study courses and is the largest correspondence school in the world. You learn at your own pace, when and where you want under the guidance of expert 'personal' tutors. Find out how we can help YOU. Post or phone today for your FREE INFORMATION PACK on the course of your choice.

- GCSE/GCE/SCE
- Electronics
- Basic Electronic Engineering (City & Guilds)
- Electrical Contracting/ Installation
- TV, Video & Hi-fi Servicing
- Radio Amateur Licence Exam (City & Guilds)
- Car Mechanics
- Computer Programming
- Motorcycle Repair

SEE ORACLE PAGE 671

Course of Interest

Name

Address

P.Code



International Correspondence Schools, Dept. EGSB9 312/314 High Street, Sutton, Surrey SM1 1PR. Tel: 01-643 9568 or 041-221 2926 (both 24 hrs)

WE WILL ONLY SUPPLY TOP QUALITY, BRANDED COMPONENTS.

BUY WITH

G.G.L.COMPONENTS
PO BOX 72, UNIT 7, SOUTH JOHN STREET, CARLISLE, CUMBRIA CA2 5AL



| REPUTATION COUN | ITS WITH US PI | HON | DX 72, UNIT 7, SOUT IE (0228) 39693/2035 | B FAX (0228) 515127 | | | | | |
|--|--|---|--|---|--|--|--|--|--|
| CAPACITORS | INTEGRATED | TYPE | PRICE (£) TYPE | PRICE (f) LINE O/D | TRANS | TRANSIST | ORS | TYPE PRICE | (E) |
| 1UF at 250V | CIRCUITS | STK5421 STK5481 | 4.95 TDA2530 8.95 TDA2532 | 200 DECCA 100 | 8.30 | TYPE | PRIC | CE 8U8071 | .30 |
| 1 100F at 250V | 11303 3.76 | STK7308 | 8.95 TDA2540 | | | BC107 | | | .25 .95 |
| 22UF at 250V40 At | V3053.50 | STR4090 | n 7.05 TDA2560 | | 7.95 | BC147 BC148 | | BU9081 | .95 |
| 47 UF at 250V | | | OA DEO IUAZ5/6A | 3.25 | | BC307 | | 12 BUW81A | .95 1.95 |
| 1 1000 F at 250V 1 26 12 | | STR4211 | 3.95 TDA2578A | 2.95 FERGUSON TX9 | | BC327 | | 11 BUX84 | .80 |
| (All Single Ended PCB Type) | A1339A 2.95 A1366W | | 1DA25/9 | 3.75 FERGUSON TX1 | | BC328 BC337 | | 11 R40502 | .95 |
| I DIODES HA | A1366WR1.85 | STR454. | 4.95 TDA2582 | | | BC338 | 1 | 12 SG264A | .95 .95 |
| TYPE PRICE HA | 113/4 | STR5804 | 6.95 TDA2591/3 1 6.95 TDA2594 | | | BC360 BC546 | | → T6071V(KIT) | 75 |
| | 1202 205 | STR6020 | (KIT)5.75 TDA2595 | | | BC547 | | 10 T9054V 3 | .50 |
| BY179 | 1100/ 3.3 0 7 | ΙΑ/193P ΤΔ7205Δ | 4.50 TDA2600 P. 1.40 TDA2611A | 6.35 20" | | BC548 BC557 | | 10 T9064V 1 | .95 |
| BY223 | 13009 1206 | TA7222P | 1.85 TDA2653A | 3.50 FIDELITY ZX 22" 5.95 HINARI CT4/5 | | BC558 | | 10 TIP31C | .45 |
| BY229/80095 LA | 12011.25 | IA7227 TA727n | Z35 TDA3190 | | | BC640 | | 5 TIP32C | .45 .45 |
| BY299 | 1265 2.65 | TA7609 | 3.35 TDA350 | 3.35 ITT CVC25/30/32 | 8.50 | BD131 | | 50 TIP42C | .45 |
| 1N4007 07 LA | 44402.75 | TBA1204 | чоТ.ОО ТDД3541 | 2.95 ITI Compact 80 | 21.95 | BD132 BD222 | | n 15/80H2 | .95 |
| 1N5408 | 4460 2 AE T | TBA800P | 85 TDA3561A | 4.95 PHILIPS G8 4.95 PHILIPS G11 | | BD225 | | 15/85R2 | .95 .20 |
| LA TENER DIODEO | 4461 2.45 | TBA810S | | 5.50 | | BD237 BD238 | 4 | ** 2SC1034 3. | .95 |
| BZX61C (1.3 Watt) 3V3 4V7 | 7901 2 an T | TBA8201 | И 1.25 IDA3571 B/0 | 1 3.95 PHILIPS K30 | 19.95 | BD278A | | 70 2SC1413A 2 | 95 95 |
| 341, 340, 042, 040, 743, 642, M | 293B16.95 | TBA920S | 1.95 IDA3650 2X 2.25 TDA3651 | 4.75 PHILIPS CTX 14' | 716" 17.95 | BD437 BD438 | | NU 2SC1942 | .90 |
| 18V, 20V, 24V, 27V, 30V, 33V, M | | | TDA3651A0 | 380 FRILIFS CIA 20 | 17.95 | BD677 | £ | ≨5 2SD7254. | .50 .95 |
| 36V, 47V, 56V, 62V, 75V, SA | A12503.85 🕹 | | 295 TDA3653AQ | 4.95 SHARP C1410 | 23.95 | BD701 | | 5 2SD8706. | 50 |
| 100V, 110V, 120V, 130V. PKIS SA | A12514.95 T | TDA1035 | T240 TDA3654AU | 4.75 — — — | | BD707 BD807 | | 25 2SD14532 | .35 .95 |
| SA | A5000A3.95 | TDA1037 | 1.95 TDA4503 | 4.65 | | BF337 | | 28 7812 | 50 |
| E.H.T. TRAYS SA | A50104.95 🗜 | | 2.95 TDA4600/2 1.25 TDA4600/2D | 2.85 Decca 80/100 3.30 Ferguson TX9/10 | | BF338 BF422 | | 7815 | 70 |
| Continental 30AX Focus 8.95 SA | A5030 | TDA1170 | S 1.80 TDA7270 | | Rem) 1.75 | BF423 | | 95 | /U |
| DECCA 80 | A50506.95 🗜 | TDA1180 | າ າໝະ TDA8190 | Tan Fidelity AVS Seri | es1.50 | BF458 BF460 | 3 | 15 | _ |
| DECCA 100 | 470/1DP 205 T | TDA1470 | 3.25 TDA9503 | 2.95 Fidelity CTV140 3.95 Fidelity CTV14R. | 1.50 | BF470 | | 10 ONERS | or |
| ITT CVC20/25/30/32 6.95 SL | 480 2.85 | IDA1506 [DA1510 | TEA1014 | | 295 | BF757 BF871 | 7 | n ELU 1043/069. | .95 |
| PHILIPS GREEN 7 on SL | 1430 1.95 T | TDA1512 | 3.50 UPC1181H | 200 Grundig CUC731 | 3.50 | BR103 | | 75 ET54814. | 20 50 |
| PHILIPS KT3 | 1431 | | 4.50 UPC1182H | 1.70 Hitachi CPT2650 | 1.95 | BR303 BT151/800 | 1.9 | ™ U3229 | 95 |
| TUODN 0000 SN | 76660N65 T | [DA1770. | A 3.70 LIPC1230H | | 1.35 | BU126 | 1.5 | i0 U343(coax skt) 14 | 95 |
| | A471C | DA1870 | 6.95 UPC1365C A1.95 UPC1378H | 4.20 Philips G11 (Rem | 1.75 | BU205 BU208A | 1.4 | (0 U343 (nhono) 16 | 95 |
| ST | K2129 11.95 T | DA1950 | A3.95 UPC1382 | 4.35 Philips KT3 | 1.50 | BU208D | 1.9 | 1111 | 95 |
| 20mm A/S: (Pkts of 10) STI | N4332 | DA2002 D∆2003 | 1.50 UPC1394C 1.55 Z80ACPU | 2.95 Philips KT/CTX (F Pye G11 (Rem) | | BU326A BU407 | 1.4 | !5 | |
| 250MA, 315MA, 400MA, ST | K4335.95 T | DA2004 | 2.90 | RBM T20/22A 3K | | BU407D | 1.5 | TV ELECTROLYTICS | S |
| STI | K439 7.50 💾 | DA2005 | 2.55 3.20 ICS | Sony KV1612 (Re | m)3.95 | BU426A BU500 | 1.9 | DECCA 80 (400/800) | 50 |
| 3.15A, 4A, 5A, 6.3A,8A 1.20 ST | K461 9.95 T | DA2030. | 1.80 18 Pin Dil-Dil | OCKETS Sony KV2022 (Re | m)3.95 | BU508A BU508D | 1.7 | PHILIPS G8(600/300)3. | .95 |
| I 500MA, 630MA, 800MA, 1A, STI | K465 11 95 T | | | 25 Tatung 160/161 30 Tatung 165 | | BU526A | 2.5 | 10 PD14 T204 (200) | 20 |
| 2A, 2.5A, 3.15A60 STI | K5332 6.95 T | DA2525 | 2.95 40 Pin Dil-Dil | 40 T | | BU536 | 2.7 | 3 TUDD\$14000 (4300 (05) 4 | |
| | | | 233 40 FIN DII-DII | 40 Thorn Universal | 1.00 | BU705 | 3.9 | 5 THORN 9000(400/400)2. | 35 |
| FERGUSON TV SPARES | GEC/HITACHI SPAR | RES | NV2000/2010 | SANYO/FISHER | | P VIDEO SPAR | 3.9 | THORN 9000(400/400)2. | 35 90 |
| TX9/10 | GEC/HITACHI SPAR | RES 5.95 | NV2000/2010 Complete Maintenance | SANYO/FISHER VIDEO SPARES | | BU705 | ES | THORN 9000(400/400) 2. VIDEO PILOT LAMPS Ferguson 3V23 (Plug) | 35 90 80 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 | RES 5.95 4.70 5.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VTC5000/5300 Loading Roller | SHAR VC8300 Cassette I | P VIDEO SPAR | ES70 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Panasonic NV2000/7200 | 35 90 80 80 70 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES | RES 5.95 4.70 5.95 | NV2000/2010 Complete Maintenance Kit (Genuine) 21.50 Cassette Lamp 70 Pinch Roller 3.95 | SANYO/FISHER VIDEO SPARES VTC5000/5300 Ucading Roller | SHAR VC8300 Cassette I Channel B | P VIDEO SPAR | ES70 (| THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC8300 | 35 90 80 80 70 70 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 | RES 5.95 4.70 5.95 | NV2000/2010 | SANYO/FISHER VIDEO SPARES VTC5000/5300 Loading Roller. 1.2 Pinch Roller . 8.1 Reel Idler (Genuine) 5.5 | SHAR VC8300 Cassette I Channel B Pinch Roll Rowind Id | P VIDEO SPAR | ES70 (| VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V29 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. | 35 90 80 80 70 70 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler. | RES 5.95 4.70 5.95 | NV2000/2010 Complete Maintenance Kit (Genuine) 21.50 Cassette Lamp 70 Pinch Roller 3.95 | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 | P VIDEO SPAR amp lank er | ES70 (7.95 (3.95 (3.50 (3.50 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. Iniversal 1. | 35 90 80 80 70 70 95 |
| TX9/10 Rocus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler FF/Rew Pulley | RES 5.95 4.70 5.95 31.95 2.65 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VTC5000/5300 Loading Roller. 1. Pinch Roller . 1. Reel Idler (Genuine) 5. Reel Motor (Genuine) 7.5 Video Head . 35. FVHP615. | VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N | P VIDEO SPAR amp | ES70 (7.953.953.50 (29.95 // | THORN 9000(400/400) 2 VIDEO PILOT LAMPS | 35 90 80 80 70 70 95 50 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V0004/T8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller | RES5.955.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VTC5000/5300 Loading Roller. 1. Pinch Roller 9. Reel Idler (Genuine) 5. Reel Motor (Genuine) 7.3 Video Head 35. FVHP615 Gear Idler Assembly 5. | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Cassette I Capstan N Cassette I Pinch Roll | P VIDEO SPAR amp | ES | THORN 9000(400/400) 2 VIDEO PILOT LAMPS erguson 3V23 (Plug) erguson 3V23 (Plug) erguson 3V29 (Plug) erguson 3V29 (Plug) erguson 5V2900/7200 ergus | 35 90 80 80 70 70 95 50 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler FF/Rew Pulley | RES5.955.9531.952.65858585 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VTC5000/5300 Loading Roller. 1. Pinch Roller 9. Reel Idler (Genuine) 5. Reel Motor (Genuine) 7. Video Head 35. FYHP615 Gear Idler Assembly 5. Pinch Roller 4. Reel Idler 9. | SHARI VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler | BU705. P VIDEO SPAR amp. lank er ler 11 Aotor amp. er er (Genuine) | ES | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. Jniversal 1. Jniversal VIDEO HEADS Alba 4000 24. Imstrad VCR4500 22. Imstrad VCR4500 23. Imstrad VCR4500 24. | 35 90 80 80 70 70 95 50 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/V79300/9500 | RES5.954.705.952.658585 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHARI VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Cassette I Pinch Roll Feel Moto Unlock As | BU705. P VIDEO SPAR amp. lank er ler flotor amp. er Genuine) sembly | | THORN 9000(400/400) 2 VIDEO PILOT LAMPS | 35 90 80 80 70 77 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor | RES5.954.705.952.65 | NV2000/2010 Complete Maintenance Kit (Genuine) 21.5K Cassette Lamp | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHARI VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Reel Idler Reel Idler Reel Moto Unlock As Video Hea | P VIDEO SPAR amp | 29.95 / .1.95 / .23.9 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS reguson 3V/23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. Jniversal 1. VIDEO HEADS Alba 4000 24. Amstrad VCR4500 22. Amstrad VCR4500 23. Amstrad VCR4500 24. Amstrad VCR4500 22. Freguson 3V00/22/29/33 15. reguson 3V00/22/29/33 15. | 35 90 80 80 80 70 70 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler FF/Rew Idler | RES5.954705.9585 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHARI VC8300 55 Cassette I Channel B Pinch Roll 165 Cassette I Pinch Roll 165 Cassette I Pinch Roll 166 Reel Moto Unlock As Video Hea | P VIDEO SPAR amp ank er ler 1 Motor amp er (Genuine) r (Genuine) sembly d | ES | THORN 9000(400/400) 2 VIDEO PILOT LAMPS erguson 3V23 (Plug) erguson 3V23 (Plug) erguson 3V29 (Plug) erguson 3V20 | 35 90 80 80 80 77 70 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/S500 Capstan Motor FF/Rew Jelley Pinch Roller FF/Rew Pulley Pinch Roller FF/Rew Pulley Pinch Roller | RES5.954.705.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Fael Idler VC481 Capstan N WC485 Videb Ho Capstan N Reel Idler | BU705. P VIDEO SPAR amp lank er. ler 1 flotor amp (Genuine) r (Genuine) sembly d | 29.95 /3.95 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS erguson 3V23 (Plug) erguson 3V23 (Plug) erguson 3V29 (Plug) erguson 1 Jniversal VIDEO HEADS VIDEO HEADS Alba 4000 22 Amstrad VCR4500 22 Amstrad VCR4500 24 Amstrad VCR4500 24 erguson 3V00/22/2939 15 erguson 3V02/2/2939 15 erguson 3V42/44/45/55 26 erguson 3V42/44/45/55 26 erguson 3V42/44/45/55 26 erguson 3V42/44/45/55 26 | 35 90 80 80 80 77 79 55 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler FF/Rew Idler | RES | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | VC3300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Cassette I Pinch Roll Faeel Idler Reel Idler VC481 Capstan M Reel Idler Reel | BU705. P VIDEO SPAR amp | 29.95 /3.95 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC8300 1. Jniversal 2 VIDEO HEADS Alba 4000 24. Amstrad VCR4500 22. Amstrad VCR4500 23. Amstrad VCR4500 24. Ferguson 3V32 47. Ferguson 3V32 47. Ferguson 3V32 47. Ferguson 3V42/4/45/55 26. Ferguson 4V42/45/55 26. Ferguson 4V42/45/55 26. Ferguson | 35 90 80 80 70 70 95 50 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller FF/Rew Idler FF/Rew Idler Video Head V4001/VT3400/9500 Vapstan Motor FF/Rew Idler Video Head V4001/VT3400/9500 Video Head V4100/VT11E/VT33E | 31.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VCassette I Channel B Pinch Roll Rewind Id VC3000/38 Capstan N Cassette I Pinch Roll Fael Idler VC481 Capstan N Reel Idler Reel Idler Capstan N Reel Idler VC481 Capstan N Reel Idler Reel Idler VC481 Capstan N Reel Idler Video Hea | BU705. P VIDEO SPAR amp. lank ler | 29.95 /3.95 | THORN 9000(400/400) 2 VIDEO PILOT LAMPS | 35 90 80 80 80 80 80 80 80 80 80 8 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/9500 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/9500 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4004/VT11E/VT33E Capstan Motor V41004/VT11E/T33E Capstan Motor VT11E) | RES | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Reel Moto Unlock As Video Hea VC481 Capstan N Reel Idler Reel Moto Unlock As Video Hea | BU705. P VIDEO SPAR amp. lank er ler loft foliation Genuine) sembly d d fotor Genuine) sembly d fotor Genuine) sembly d fotor Genuine) for Genuine) | 29.95 / | THORN 9000(400/400) 2 VIDEO PILOT LAMPS reguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC8300 Sharp VC9300 1 Jniversal 1 Amstrad VCR4500 22 Amstrad VCR4500 22 Amstrad VCR4500 22 Amstrad VCR4500 22 Ferguson 3V00/22/29/39 15 reguson 3V00/22/29/39 15 reguson 3V02/24/44/55/5 26 tinari VXL2/4 24 titachi 8000/9300/9500 22 ditachi 8000/930/9500 22 ditachi 8000/9300/9500 22 ditachi 80000/9300/9500 22 ditachi 8000/9300/9500 22 ditachi 800 | 35 30 80 80 80 80 80 80 80 80 80 8 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Pulley Pinch Roller FF/Rew Pulley Pinch Roller FF/Rew Idler F | 31.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHAR VC3300 Cassette I Channel B Pinch Roll Rewind Id VC3000/38 Capsten I Pinch Roll Faeel Idler Reel Idler Seel Idler Seel Idler Reel Idler Reel Idler Seel Idler Seel Idler Seel Idler Seel Idler Seel Idler Seel Idler Reel Idler Seel Idler S | BU705. P VIDEO SPAR amp. lank er ler loftor .amp. Genuine) .r (Genuine) .sembly d fotor .Genuine) .r (Genuine) .genuine) .genuine) | Z29.95 F F F F F F F F F F F F F F F F F F F | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. Jniversal 1. Jniversal 2. Alba 4000 24. Amstrad VCR4500 22. Amstrad VCR4500 23. Amstrad VCR4500 24. Amstrad VCR4500 24. Amstrad VCR4500 25. Ferguson 3V072/29/39 15. Ferguson 3V072/29/39 15. Ferguson 3V32/44/4/45/55 26. Ferguson 3V42/44/45/55 26. Fergu | 35 90 80 80 70 70 95 50 95 50 55 55 55 55 55 55 55 55 55 55 55 55 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/9500 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3000/9500 Capstan Motor FF/Rew Idler Capstan Motor VITIE Capstan Motor VITIE Capstan Motor (VT11E) Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) | RES | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHAR VCassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Reel Moto Unlock As Video Hea VC481 Seel Moto Video Hea VC481 Seel Moto Video Hea Seel Moto Video Hea Feel Moto Feel Moto Video Hea Feel Moto Fe | BU705. P VIDEO SPAR amp. lank er ler loft fotor .amp. Genuine) .r (Genuine) .sembly d fotor .Genuine) .r (Genuine) .sembly d fotor .genuine) .r (Genuine) .sembly d fotor .genuine) .r (Genuine) .r (Genuine) .r (Genuine) | 29.95 /35 / | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Plug | 3590 88870709550 9550955595595555555555555555555 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES W000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT33E Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller | RES 5.95 4.70 5.95 3.95 2.65 3.95 4.50 2.295 2.50 2.35 2.295 2.50 3.35 2.295 2.50 3.35 3.55 2.295 2.50 3.35 3.55 2.35 3.55 2.35 3.55 2.35 3.55 2.35 3.35 3 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VCassette I Channel B Pinch Roll Rewind Id VC3000/38 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea Reel Moto Video Hea Reel Reel Reel Reel Reel Reel Reel Ree | P VIDEO SPAR amp | 29.95 / .1.95 | VIDEO PILOT LAMPS reguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC8300 Sharp VC8300 Alba 4000 24 Amstrad VCR4500 22 Amstrad VCR4500 24 Amstrad VCR4500 25 crguson 3V22/29/39 15 crguson 3V42/44/45/55 26 crguson 3V42/44/45/55 27 crguson 3V42/44/45/55 28 crguson 3V42/44/45/55 29 crguson 3V42/44/45/55 20 crguson 3V42/44/4 | 35 90 80 80 70 70 95 50 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/V73000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3000/S000 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3005 Capstan Motor FF/Rew Idler Capstan Motor (VT335) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head | RES 5.95 4.70 5.95 3.95 2.65 3.95 4.50 2.295 2.50 2.35 2.295 2.50 3.35 2.295 2.50 3.35 3.55 2.295 2.50 3.35 3.55 2.35 3.55 2.35 3.55 2.35 3.55 2.35 3.35 3 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER VIDEO SPARES VIC5000/5300 Loading Roller. | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I O Reel Idler Repstan N Reel Idler Repstan N Reel Idler | BU705. P VIDEO SPAR amp. lank er ler loft fotor .amp. Genuine) .r (Genuine) .sembly d fotor .Genuine) .r (Genuine) .sembly d fotor .genuine) .r (Genuine) .sembly d fotor .genuine) .r (Genuine) .r (Genuine) .r (Genuine) | ES | THORN 9000(400/400) 2 | 35 90 80 80 777 95 50 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT300/S000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT300/S000 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT33E Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4006/VT63E Capstan Motor (VT33E) Clutch Capstan Motor (VT35E) Capstan Motor (VT35E) Capstan Motor | RES 5.95 4.70 5.95 2.65 4.70 2.65 4.50 2.65 4.50 2.2.95 2.6.95 2.2.95 2.5.95 2.2.95 2.5.95 2.2.95 2.5.95 2.2.95 2.5.95 2.2.95 2.5.95 2.2.95 2.5.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Idler Reel Moto Video Hea Capstan N Rewind Ki Video Hea | BU705. P VIDEO SPAR amp. lank er ler loft foliotor Genuine) Genuine) Genuine) Genuine) Genuine) Genuine) Genuine) Genuine | Section Sect | VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 Sharp | 3590 80 80 70 70 95 50 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/S500 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Video Head V4001/VT300/S500 Capstan Motor FF/Rew Idler Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3025 Capstan Motor (VT11E) Capstan Motor (VT1E) | RES 5.95 4.70 5.95 4.70 5.95 31.95 2.66 85 3.95 2.95 1.95 2.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Rewind Id So Capstan N Reel Idler Rewind Ki Video Hea VC481 Capstan N Reel Idler Rewind Ki So Capstan N Reel Idler Rewind Ki Video Hea | P VIDEO SPAR amp | Section Sect | THORN 9000(400/400) 2 VIDEO PILOT LAMPS reguson 3V/23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1. Jniversal 1. VIDEO HEADS Alba 4000 24. Amstrad VCR4500 22. Amstrad VCR4500 22. Amstrad VCR4500 22. Amstrad VCR4500 22. Amstrad VCR4500 23. Amstrad VCR4500 24. Amstrad VCR4500 24. Amstrad VCR4500 25. Amstrad VCR4500 26. Amstrad VCR4500 27. Amstrad VCR4500 37. Amasonic NV300 39. Amasonic NV300 34. Amasonic NV300 35. Amasonic NV300 36. | 3590 80 80 70 70 95 50 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT300/S000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT300/S000 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT33E Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4006/VT63E Capstan Motor (VT33E) Clutch Capstan Motor (VT35E) Capstan Motor (VT35E) Capstan Motor | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 5.55 5.55 5.55 5.55 2.295 2 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300/38 Cassette I Channel B Pinch Roll B Rewind Id VC3300/38 Capstan N Cassette I Pinch Roll B Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC482 Amstrad V Amstra | BU705. P VIDEO SPAR amp. lank er . ler . flotor . amp. er . (Genuine) . (Genuine) . (Genuine) . flotor . Genuine) . dotor . Constant . DNY SPARES lotor C7 . er C5/6/7 . c5/7 . c5/7 . C6 d C5/6/7 . EO BELT KITS ///5/5 . | Section Sect | VIDEO PILOT LAMPS | 3590 80807079550 9555955555555555555555555555555 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT38E Capstan Motor (VT11E) FF/Rew Idler (Genuine) Pinch Roller Video Head V4006/VT63E Capstan Motor Video Head V4006/VT63E Capstan Motor Pinch Roller Video Head V4006/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 31.95 2.65 85 3.95 2.295 1.95 2.295 2 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N C | BU705. P VIDEO SPAR amp. lank er loft fotor amp. er (Genuine) dotor (Genuine) fotor (Genuine) fotor (Genuine) fotor (Genuine) fotor (Genuine) fotor (Genuine) fotor fotor (Genuine) fotor foto | Section Sect | THORN 9000(400/400) 2 VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 1 Jniversal 1 VIDEO HEADS Alba 4000 24 Amstrad VCR4500 22 Amstrad VCR4500 22 Amstrad VCR4500 22 Ferguson 3V20/22/29/39 15 Ferguson 3V40/44/45/55 26 Ferguson 3V40/44/45/55 26 Ferguson 3V40/44/55/5 26 Ferguson 3V40/44/45/55 26 Ferguson 3V40/44/44/44/44/44 Ferguson 3V40/44/44/44/44/44/44/44/44/44/44/44/44/4 | 3590 8887770950 95595959595959595959595959595959595 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/S500 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3025 Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT335) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4004/VT63E Capstan Motor FF/Rew Idler (Genuine) Pinch Roller Video Head V4004/VT63E Capstan Motor V4006/VT63E C | RES 5.95 4.70 5.95 4.70 5.95 2.65 85 3.95 2.65 85 3.95 2.295 1.95 2.95 2.95 2.95 2.95 2.95 2.95 2.95 2.95 2.95 2.95 2.95 4.95 4.95 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Re | BU705. P VIDEO SPAR amp. lank er ler loftor amp. er (Genuine) d fotor (Genuine) d fotor (Genuine) d fotor (Genuine) d fotor (Genuine) fotor | Section Sect | VIDEO PILOT LAMPS | 3590 8880 7770 9550 9550 9550 9550 9550 9550 955 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3000/9500 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4004/VT1E/VT33E Capstan Motor (VT11E) Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 2.265 4.50 2.295 4.50 3.95 2.295 2.295 2.295 2.295 2.295 2.295 2.295 2.295 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 2.295 4.95 4.95 4.95 4.95 4.95 4.95 4.95 4.95 4.95 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) 21.50 Cassettle Lamp 77. Finch Roller 3.99 Play Idler (Genuine) 1.25 Video Head 17.95 NV7000/7200 Complete Maintenance Kit (Genuine) 1.75 NV7000/7200 Complete Maintenance Kit (Genuine) 7.75 NV7000/7200 Cassettle Lamp 7.00 Pinch Roller 3.99 Play Clutch (Genuine) 1.25 Video Head 17.95 Play Clutch (Genuine) 1.25 Video Head 17.95 Perguson TX9 U/S Basic 14.50 Ferguson TX9/10 N/Text 12.95 Ferguson TX9/10 Text 12.95 Ferguson TX9/10 Text 12.95 Ferguson TX9/10 Text 12.95 Ferguson 3V35 Video 16.95 Ferguson 3V35 Video 16.95 Ferguson 3V35 Video 16.95 Ferguson TX9/10 Text 1.95 Ferguson SV35 Video 16.95 Ferguson 3V35 Video 16.95 Ferguson 3V35 Video 16.95 Fidelity CTV14F/S 12.95 Grundig TP200 12.95 Grundig TP200 12.95 Grundig TP400TT 12.95 TIT RG30/305 Text 14.50 TIT RG306 Text 14.50 Palasonic NV7200 Video 15.95 Philips G11 U/S Full Rem 15.95 Plilips G11 U/S Full Rem 15.95 Pl | SANYO/FISHER | SHAR VC8300/38 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Reel Idler Sel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Rewind Kir Video Hea VC481 Capstan N Reel Idler Rewind Kir Video Hea VC481 Capstan N Reel Idler Rewind Kir Video Hea VC481 Capstan N Rewind Kir Video Hea VC481 Capstan N Rewind Kir Video Hea VC481 Capstan N Rewind Kir Video Hea Ferguson 3 | BU705. P VIDEO SPAR amp. lank er. ler. loftor. amp. er. (Genuine) r (Genuine) r (Genuine) d totor (Genuine) | Section Sect | VIDEO PILOT LAMPS | 3590 80 80 77 70 95 50 95 50 50 50 50 50 50 50 50 50 50 50 50 50 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler (Genuine) FF/Rew Idler | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.50 4.95 4.95 4.95 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) 215.5 | SANYO/FISHER | SHAR VC83001 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Dinch Roll Reel Idler R | BU705. P VIDEO SPAR amp. lank er ler loftor amp. er (Genuine) r (Genuine) d fotor (Genuine) cr (Genuine) fotor (Genuine) cr (Genuine) fotor (Genuine) fotor (Genuine) fotor (Genuine) cr (Genuine) fotor (Genuine) d DNY SPARES fotor (C5/6/7 C5/7 C6/7 C6/7 C7 C7 C7 C7 C7 C7 C7 C7 C7 | Section Sect | VIDEO PILOT LAMPS | 3590 80 80 70 70 95 50 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES W000VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head W4001VT3300V500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001VT330V500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100VT11EVT38 Capstan Motor (VT31E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDEO SPARES NV333366 Complete Maintenance Kit (Genuine) Cassette LED | RES 5.95 4.70 5.95 4.70 5.95 2.65 8.5 4.50 22.95 4.50 3.395 22.95 2.295 2.295 2.295 2.295 2.295 2.295 2.295 1.55 4.95 4.95 4.95 4.95 4.95 4.95 4.95 1.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC83001 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler R | BU705. P VIDEO SPAR amp. lank er . ler . floor . floo | Section 1985 1 | VIDEO PILOT LAMPS | 3590 88 80 77 70 550 955 555 555 555 555 555 555 555 55 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/V78000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/V73000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/V73000 Capstan Motor FF/Rew Idler PF/Rew Idler FF/Rew Idler Play Idler Video Head V4001/V73005 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/V711E/V733E Capstan Motor (V711E) Capstan Motor (V711E) Capstan Motor (V711E) Capstan Motor (V711E) Capstan Motor (V71E) FF/Rew Idler (Genuine) Pinch Roller Video Head V400/V763E Capstan Motor V4006/V763E Capstan Motor V4006/V763E Capstan Motor V4006/V763E Capstan Motor V4006/V763E Capstan Motor Capstan Motor V4006/V763E Capstan Motor V4006/V763E Capstan Motor Capstan Motor Capstan Motor V4006/V763E Capsta | RES 5.95 4.70 5.95 4.70 5.95 2.65 8.5 3.1.95 2.2.95 3.1.95 3.3.95 2.2.95 3.3.95 2.2.95 2.2.95 2.2.95 2.2.95 2.2.95 2.2.95 2.2.95 2.3.95 2.2.95 2.3.95 2.2.95 2.3.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300/38 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Reel Idler Feel Moto Video Hea VC481 Capstan N Reel Idler SCAPSTAN Reel Idler Reel Idler SCAPSTAN Reel Idler | BU705. P VIDEO SPAR amp. lank er ler di dotor amp. (Genuine) r (Genuine) d but (Genuine) d but (Genuine) d construction constructi | Section Sect | VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 Zumstrad VCR4500 Zumstrad VCR4600 Zumstrad VCR4600 Zumstrad VCR4000 Zumstrad VCR7000 Zumstrad VCR7000 Zumstrad VCR7000 Zumstrad VCR7000 Zumstrad VCR9000 Zumstrad VCR900 Zumstrad VCR9000 Zumstrad VCR90000 Zumstrad VCR90000 Zumstrad VCR90000 Zumstrad VCR900000 Zumstrad VCR900000 Zumstrad VCR90000 Zumstrad VCR900000 Zumstrad VCR90000 Zumstrad VCR900000 Zumstrad VCR900000 Zumstrad VCR9000000 Zumstrad VCR9000000 Zumstrad VCR90000000 Zumstrad VCR90000000 Zumstrad VCR9000000000 Zumstrad VCR9000000000000000000000000000000000000 | 3590 88 88 77 70 550 95 50 55 55 55 55 55 55 55 55 55 55 55 55 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4006/VT11E/CT33E Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT32E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDE(SPARES NV333/366 Complete Maintenance Kit (Genuine) Cassette LED Pinch Roller Play Idler (Genuine) Play Idler (Genuine) Play Idler (Genuine) Play Idler (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 2.265 4.50 2.295 4.50 2.295 4.50 2.295 2 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VCassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Reel Idl | BU705. P VIDEO SPAR amp. lank er ler loftor amp. er (Genuine) d d fotor (Genuine) d fotor (Genuine) d fotor (Genuine) fotor | ES 70 6 70 70 70 70 70 70 | VIDEO PILOT LAMPS Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Ferguson 3V23 (Plug) Panasonic NV2000/7200 Sharp VC3300 Sharp | 3590 88807079550 95959559595959595959595959595959595 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Video Head V4001/VT3000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Video Head V4001/VT3000/S000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3025 Capstan Motor (VT11E) Capstan Motor (VT1E) Capstan Motor (VT0E) FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor Capstan Motor Capstan Motor PANASONIC VIDEO SPARES Complete Maintenance Kit (Genuine) Pinch Roller Play Idler (Genuine) Reel Idler (Genuine) Reel Motor (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 22.95 4.50 22.95 4.50 22.95 22.95 22.95 22.95 22.95 22.95 4.50 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 22.95 2 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VCassette I Channel B Pinch Roll Rewind Id VC3000/38 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reevind Ki Video Hea VC481 Capstan N Reel Idler Reevind Ki Video Hea VC481 Capstan N Reel Idler Reevind Ki Video Hea VC481 Capstan N Reevind Ki Video Hea VIDVA Amistrad V VAmistrad V Amistrad V Ferguson 3 F | BU705. P VIDEO SPAR amp. lank er. ler. dotor. amp. (Genuine) r (Genuine) r (Genuine) d DNY SPARES lotor C7 er C5/67 c5/7 c5/7 c6. d C5/67/ c7/7 c8/67 c7/7 c8/67 c7/7 c8/67 c7/7 c8/67 | ES 70 70 70 70 70 70 70 7 | VIDEO PILOT LAMPS | 359 8887779550 95559555955555555555555555555555 |
| TX9/10 Focus Unit TX10. 8.50 Line 0/P Trans TX9. 22.50 Line 0/P Trans TX10. 29.95 On/Off Switch (Remote) 1.95 Push Button TX9. 16.95 Push Button TX9. 16.95 Push Button TX10. 16.95 RFI Choke TX9. 2.95 Tuner. 14.95 TX99/100 Line 0/P Trans TX90 14" 19.75 Line 0/P Trans TX90 20" 19.75 Line 0/P Trans TX100 90" 19.95 Line 0/P Trans TX100 10" 20.95 Mains Trans. (TX90) 17.95 Cond off Switch (Remote) 1.75 Push Button TX90. 17.95 Tuner. 14.35 TERGUSON 17.95 Tuner. 19.95 Tuner. 19. | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES W000/VT8000 Capstan Motor FF/Rew Idler Play Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/T33E Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDEC SPARES NV333/66 Complete Maintenance Kit (Genuine) Cassette LED Pinch Roller Play Idler (Genuine) Reel Idler (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 22.95 1.95 85 3.95 22.95 85 22.95 25.95 2.29.5 4.95 4.95 4.95 4.95 4.95 4.95 4.95 4.95 1.12.5 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300 Cassette I Channel B Pinch Roll Rewind Id VC300V38 Capstan N Reel Idler Faeel Idler Capstan N Reel Idler SC Capstan N Reel Idler Capstan N Reel Idler Capstan N Reel Idler Capstan N Reel Idler Capstan N Rewind Ki Video Hea VIdeo Hea VID Akai VS1/2 Amstrad V Amstrad V Ferguson 3 Fergus | BU705. P VIDEO SPAR amp. lank er. ler. dotor. amp. (Genuine) r (Genuine) r (Genuine) d DNY SPARES lotor C7 er C5/67 C5/7 C5/7 C6. d C5/67/ C5/7 C6. C7 er C5/67 C7 er C5/67 C7 er C5/67 C7 er C5/67 C8 er C9 er | ES 70 70 70 70 70 70 70 7 | VIDEO PILOT LAMPS | 359 8887079550 95559555955555555555555555555555 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3000/S500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3002/S500 Capstan Motor FF/Rew Idler Play Idler Video Head V4004/VT11E/VT33E Capstan Motor (VT11E) Capstan Motor (VT335) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor FANASONIC VIDEO SPARES NV333/366 Complete Maintenance Kit (Genuine) Play Idler (Genuine) Play Idler (Genuine) Play Idler (Genuine) Reel Idler (Genuine) Video Head NV370/380 Complete Maintenance | RES | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300 Cassette I Channel B Pinch Roll Rewind Id VC3300/38 Capstan N Cassette I Pinch Roll Rewind Id VC300/38 Capstan N Reel Idler Faeel Moto Video Hea VC481 Capstan N Reel Idler Faeel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reel Idler Reel Moto Video Hea VC481 Capstan N Reevind Ki Video Hea Video Hea Freguson 3 Ferguson 3 Fergu | BU705. P VIDEO SPAR amp. lank er ler loftor amp. et (Genuine) d (Genuine) d (Genuine) d (Genuine) d (Genuine) for (Genuine) for (Genuine) d (Genuine) d (Genuine) d (Genuine) d (Genuine) loftor (7) et (Genuine) for (7) et (7) | ES | VIDEO PILOT LAMPS | 359 8887079550 95559555955555555555555555555555 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES W000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/T33E Capstan Motor (VT33E) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDEG SPARES NV333/066 Complete Maintenance Kit (Genuine) Reel Idler (Genuine) Kit (Genuine) Kit (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 2.265 4.50 2.295 4.50 3.95 2.295 2.295 2.295 2.295 2.295 2.295 2.295 2.295 1.5.95 2.295 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Rodi Rewind Id VC9300/38 Capstan M Cassette I Pinch Rodi Reel Idler Re | BU705. P VIDEO SPAR amp. lank er ler di dotor amp. (Genuine) r (Genuine) d dotor Genuine) d DNY SPARES lotor C7 er C5/6/7 C6 C6 d C5/6/7 EO BELT KITS /// /// /// /// /// /// /// /// /// / | ES | THORN 9000(400/400) 2 | 359 8887079550 95559555955555555555555555555555 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3000/S500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3002/S500 Capstan Motor FF/Rew Idler Play Idler Video Head V4004/VT11E/VT33E Capstan Motor (VT11E) Capstan Motor (VT335) Clutch Assy FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor FANASONIC VIDEO SPARES NV333/366 Complete Maintenance Kit (Genuine) Play Idler (Genuine) Play Idler (Genuine) Play Idler (Genuine) Reel Idler (Genuine) Video Head NV370/380 Complete Maintenance | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 22.95 1.95 85 3.95 22.95 85 22.95 26.95 22.95 25.90 25.90 1.95 4.95 22.95 1.95 4.95 4.95 1.95 4.95 1.95 4.95 1.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 1.7.95 4.95 3.35 4.95 1.7.95 4.95 3.35 4.95 1.7.95 4.95 3.35 4.95 1.7.95 4.95 3.35 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 4.95 3.25 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300C38 Channel B Pinch Rodl Rewind Id VC300C38 Capstan N Cassette I Pinch Rodl Reel Idler | BU705. P VIDEO SPAR amp. lank er ler dotor amp. er (Genuine) dotor Genuine) dotor Genuine) dotor Genuine) dotor Genuine) lotor Genuine) dotor C7 er C5/6/7 C66. dotor C7 er C5/6/7 C66. dotor C7 er C5/6/7 C7 C8 EO BELT KITS C8 | ES | VIDEO PILOT LAMPS | 359 8887079550 95559555955555555555555555555555 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT33E Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT1E) Capstan Motor FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDE(SPARES NV333/366 Complete Maintenance Kit (Genuine) Reel Idler (Genuine) Reel Idler (Genuine) Reel Idler (Genuine) Pinch Roller Reel Idler (Genuine) Video Head V770/380 Complete Maintenance Kit (Genuine) Pinch Roller Reel Idler (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.50 2.65 4.50 2.95 4.50 3.95 2.295 2.295 2.295 2.295 4.95 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Re | BU705. P VIDEO SPAR amp. lank er. ler. dotor. amp. er (Genuine) r (Genuine) r (Genuine) d. DNY SPARES lotor C7 er C5/6/7 .C5/7 .C | ES 70 1 3 3 5 5 3 3 3 5 0 1 7 3 5 5 5 5 5 5 7 7 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | VIDEO PILOT LAMPS | 359 8887779550 95559555555555555555555555555555 |
| TX9/10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3000 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3000/S000 Capstan Motor FF/Rew Idler PF/Rew Idler PF/Rew Idler PF/Rew Idler Play Idler Video Head V4001/VT300/S000 Capstan Motor FF/Rew Idler Play Idler Video Head V4004/VT11E/VT33E Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT1E) Capstan Motor (VT1E) Capstan Motor (VT1E) Capstan Motor (VT1E) Capstan Motor V10e0 Head V4006/VT63E Capstan Motor Capstan Motor Capstan Motor PANASONIC VIDEO SPARES NV333/366 Complete Maintenance Kit (Genuine) Play Idler (Genuine) Play Idler (Genuine) Reel Idler (Genuine) Video Head NV370/300 Complete Maintenance Kit (Genuine) Video Head NV370/300 Complete Maintenance Kit (Genuine) Pinch Roller Reel Idler (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 4.50 22.95 4.50 22.95 4.50 22.95 4.50 22.95 4.50 22.95 4.50 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC3300/38 Cassette I Channel B Pinch Roll Rewind Id VC3000/38 Capstan N Feel Idler Feel Moto Video Hea VC481 Capstan N Reel Idler SCAPSTAN N Reel Idler Reel Moto SCAPSTAN N Reel Idler SCAPSTAN | BU705. P VIDEO SPAR amp. lank er . ler . fl f | ES 70 1 3 3 5 3 3 5 7 7 7 9 5 3 3 5 5 7 7 7 9 5 7 9 7 9 7 9 7 9 7 9 7 9 7 | VIDEO PILOT LAMPS | 359 80807779550 95959595959595959595959595959595959 |
| TX9/10 Focus Unit TX10 | GEC/HITACHI SPAR HM3232 HM6251 HM9032 VIDEO SPARES V4000/VT8000 Capstan Motor FF/Rew Idler FF/Rew Pulley Pinch Roller Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4001/VT3300/9500 Capstan Motor FF/Rew Idler Play Idler Video Head V4100/VT11E/VT33E Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT11E) Capstan Motor (VT1E) Capstan Motor FF/Rew Idler (Genuine) Pinch Roller Video Head V4005/VT63E Capstan Motor End Sensors (Pair) Pinch Roller Video Head PANASONIC VIDE(SPARES NV333/366 Complete Maintenance Kit (Genuine) Reel Idler (Genuine) Reel Idler (Genuine) Reel Idler (Genuine) Pinch Roller Reel Idler (Genuine) Video Head V770/380 Complete Maintenance Kit (Genuine) Pinch Roller Reel Idler (Genuine) | RES 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 5.95 4.70 | NV2000/2010 Complete Maintenance Kit (Genuine) | SANYO/FISHER | SHAR VC8300 Cassette I Channel B Pinch Roll Rewind Id VC9300/38 Capstan N Cassette I Pinch Roll Reel Idler Re | BU705. P VIDEO SPAR amp. lank. er. ler. loftor. amp. et (Genuine). genuine). r (Genuine). r (Genuine). d d. DNY SPARES lotor C5/6/7. c5/7. c6. d C5/6/7. EO BELT KITS //// //// //// //// //// //// /// /// | ES 70 1 3 3 5 5 7 7 7 8 5 3 3 3 5 6 1 7 3 5 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 | VIDEO PILOT LAMPS | 359 88 80 7 7 7 9 5 0 9 5 5 9 5 5 9 5 5 5 5 5 5 5 5 5 5 |



3½ AND 4½ DIGIT Dmms

ALL WITH CONTINUITY TEST (* With Capacitance + With Hise O With Freq.)

PRO SERIES METEX

3% & 4% DIGIT All With Case, 20A AC/DC 17mm Display (3800 12mm)

3800 32 Range 0.5% (+) 3610 3C Range 0.3% (+) 3610 3C Range 0.3% (+) 3650 30 Range 0.3% (+*) 3650 30 Range 0.3% (+**) 36508 as 3650 with Bargraph 46308 4½ Digit 30 Range Data Hald 0.05% (++

4650 as 4630 Plus 2 Freq. Ranges

STANDARD SERIES

3% DIGIT 12 mm DISPLAYS £19.45 2315B 17 Range 10 ADC £22.78 £25.25 £29.40 2318B 23 Range 10ADC (+) 2335 31 Range 10A AC/DC (+) 2325 32 Range 10A AC/DC (++) 2355 32 Range 10A AC/DC (++ £38.86 £46.90 £33.25 £36.00 2365 38 Range 10A AC/DC (+*o) Plus Logic Probe £50.90 £57.60

£69.68 Also Metex M80 21mm Display 3% Digit Autorange. Datahold (°) £59.92

TEST INSTRUMENTS

| 3000 LCR AC Bridge M3002A AC Millivolt Meter 1MHZ 2020 500 KHZ Function Generator | £103.20 £85.80 £96.50 | TE220 1 MHZ Audio Generator 3300 Autorange Digital Cap Meter 6100 Signal Tracer/Injector | £87.00 £64.00 £52.30 |
|---|-----------------------------|--|----------------------------|
| 4162A0 150 MHZ Fr Gen. Plus 6 Digit Counter 2603AD 1 MHZ Af Gen. plus 6 Digit | £172.86 | 5250 150 MHZ 7 Digit Frequency Counter 08T5M 5 MHZ Bench Scope | £64.50 £166.00 |
| Counter TE20II 150 MHZ Rf Gen. (350 MHZ Harmonic) | £166.16 £80.00 | 243 0/24V 0/3A Variable PSU 245 0/24V 0/5A Variable PSU 154 4/15V 0/4A Variable PSU | £52.13 £65.50 £37.39 |

"POCKET" TEST INSTRUMENTS

| Ì | F20 Dual Scale Sound Level Meter | 022.07 | 302K LCD Temperature Two 1/P | £34.74 |
|---|---|--|---|--|
| | 225% VHS Video Head Tester 1065 Digital Lux Meter – 3 Ranges £ | £33.87 £30.39 148.00 £6.10 | 3900TD LCD Dmm With Dwell And Tach Ranges KT50 LCD 8 Range Capacitance Meter 6060 LCD Digital True Power Meter | £49.58 £34.84 |
| | 07 Logic Probe M625 Logic Probe/Pulser | £14.74 | 6KW 19 | £64.00 |
| | 300,/310 AC Clamp Meter 600A/300V/ Res/s | £33.50 | 2070 19 Range Multimeter 10ADC * Buzz | £11.35 |
| | 501 Electronic Insulation Tester 500V 504 Electronic Insulation Tester 1000V KOM6 TR Dip Meter 1.5 to 250 MHZ | £16.48 £53.00 £65.00 £45.02 £35.50 | 2030ET 27 Range 10A AC/DC. Cap. Hite Temp. Buzz 5050E 41 Range FET mm 0M5 Wallet Autorange Dmm YF120 Pen Type Autorange Dmm 850 Mains Phase Tester | £35.30 £25.33 £18.69 £32.70 £21.20 |



AUDIO-ELECTRONICS ARE INSTRUMENT DISTRIBUTORS FOR HAMEG • FLIGHT • BLACKSTAR

 ALTAI → THURLBY → THANDAR CROTECH • LEADER AND HITACH!

PHONE FOR BEST PRICES.

ADE 15% VAT (JK ONLY)

INSTRUMENT CATALOGUE WITH OIS COUNT VOLICHERS REETG

REFTG Send A4 SAE (£1.00) or £2.00 UK

TELEPHONE YOUR ORDER WITH VISA/ACCESS **OPEN 6 DAYS A WEEK FOR CALLERS**

AUDIO ELECTRONICS

301 Edgware Road, London W2 1BN Tel: 01-724 3564 Fax: 01-724 0322 Sales office 01-258 1831

TRADE/EDUCATION ORDERS ACCEPTED.

CATALDGUE **EDUCATION AND QUANTITY PRICES AVAILABLE**

IN TUBE REBUILDING TECHNOLOGY

ED SERVICING

AVAILABLE ONLY FROM CHROMAVAC. PRE CONVERGED AS ORIGINAL MULTIPOLE UNIT NOT REQUIRED





Get on the hot-line today!

SAVE £££s

KEEP THAT OLDER SET **PURCHASE A NEW 56-410** OR 47-342/3 TUBE FOR ONLY £5 + CARRIAGE Also NEW 560 AKB22 £35 NEW 670 XB22 £37.50

061 **681 295**9

most types of Inline Re-builds or new ex-stock PRICES SUBJECT TO GLASS EXCHANGE

Delta Rebuilds

| Up to 19" | £28 |
|---------------------|------|
| | |
| Up to 22" | £30 |
| Up to 26" | |
| | |
| 110° up to 22″ | E34 |
| 110° up to 26" | £38 |
| | |
| Low focus | |
| A47 342 New | £28 |
| 17FHP New | |
| | |
| 470EHB New | £30 |
| Delta only. Less 59 | 651 |
| Delta Only, Less 3 | 0 01 |

Inline Rebuilds

| Up to 22" From | £40 |
|----------------|-----|
| Up to 26" From | £45 |
| A56 - 540x | |
| A66 - 540x | £58 |
| Bonded Coil | +£5 |

ALL SIZES OF NEW AND **REBUILT MONO TUBES** AT COMPETITIVE PRICES

IN LINE TYPES (NOT REBUILOS) PHONE RE STOCK POS.

| | Please | enau |
|------------|--------|------|
| 370 HFB-A | | |
| 370 HUB | | £50 |
| AXT 37-00 | 1 | £50 |
| 420 CSB | | £50 |
| 420 EDB-A | 42-590 | £50 |
| 420 EZB | | £50 |
| 420 ERB | | £50 |
| 470 KUB | | |
| 510 UFB | | £67 |
| 510 VSB | | £67 |
| AXT51-001 | | £67 |
| 560 DYB-56 | 60 DTB | £67 |
| 560 EGB | | £67 |
| 560 CGB | | £67 |
| 560 DMB | | £67 |

| es not listed | |
|-----------------------|-----|
| AXT 56-001 | £67 |
| 670 CZB | £80 |
| A66-540 f | 125 |
| 420FSB | |
| 14" (A34); 16" (A38); | |
| (A51); FST now avail | |
| at special low price | |

MIN. CARRIAGE £5 £10 if glass collected. **TERMS** Cash with order ALL PRICES **EXCLUSIVE OF VAT**

NOTE Surcharge without exch. glass ★ WE PURCHASE SURPLUS STOCKS OF INLINE TUBES: ALSO A56/ 66 – 510/540 ETC OLD GLASS DELIVERY: By return on all stock items.

THE COMPANY WHO PUT HIGH STANDARDS FIRST





CHROMAVAC LTD., PUMP STREET, HOLLINWOOD, OLDHAM OL9 7LR

Ask for Mr Butterworth ON: 061-681 2959

West Midlands T.V. & Video Wholesale

GREAT CLEARANCE SALE

OVER 3000 TV's & VIDEO'S IN STOCK AT UNBEATABLE PRICES - HURRY NOW.

HUGE STOCKS WORKING & GENUINE UNTESTED TV'S & VIDEO'S

LOTS OF SPECIAL OFFERS WHILST STOCKS LAST

WORKING CTV's

| PHILIPS G11 | £18 |
|-------------|-----|
| KT3/K30 | £30 |
| BUSH T20 | £18 |
| GRUNDIG | £35 |
| TOSHIBA | £30 |
| TX9 | £30 |
| TX TEXT | £55 |
| STEREO TEXT | £75 |
| | |

WORKING ELECTRONIC VIDEOS From £50

SPARES AVAILABLE FOR MOST TV'S & Video'S (CALLERS WELCOME)

WORKING VIDEO's

| FERGUSON 3V29/3V30 | £65 |
|--------------------|-----|
| JVC 7200 | £75 |
| PANASONIC | £75 |
| SHARP | 083 |
| AMSTRAD 7000 | £70 |
| 3V31/3V35 | 290 |
| HITACHI VT11 | ٤75 |

TEST YOUR OWN SETS

NEW INFRA RED HAND SETS FROM £10

VHS VIDEO HEADS FROM £15

BLOCKS OF 10 SETS FROM £40

★ DELIVERY CAN BE ARRANGED ★

ALL PRICES SUBJECT TO V.A.T. AND QUANTITY

TRADE SHOWROOM

LARGE QUANTITY
OF READY
TO SELL
VIDEO'S & TV'S

Call in - you will be delighted

2 MINUTES FROM JUNCT. 9-M6

OFF LITTLE LONDON
CALDMORE, WALSALL

TEL. 0922 724542/722208

MOBILE 0860 749202

Open Mon-Sat 9am - 6pm Sunday by appointment

TRADE WAREHOUSE NOW OPEN IN HULL

UNITS 6/7, BRIGHTON STREET INDUSTRIAL ESTATE, HESSLE ROAD, HULL HU3 4UW. TEL: 0482-215215

EXTENSIVE RANGE OF EX RENTAL QUALITY TVS/VIDEOS INCLUDING THORN NOW AVAILABLE TO THE TRADE ONLY. BEST PRICES ALWAYS AVAILABLE. CALL TODAY. WE ARE UNDER THE A63, CLIVE SULLIVAN WAY, RUNNING INTO HULL, TAKE EXIT RING ROAD/DOCKS.

BASFORD WHOLESALE

(BASFORD WHOLESALE IS THE TRADING NAME OF CORIGROVE LTD.)

No. 1 LIST BAKERS DOZEN PACKS

All packs are £1 each, if you order 12 then you are entitled to another free. Please state which one you want. Note the figure on the extreme left is the pack ref number and the next figures is the quantity of items in the pack, finally a short description.

- 13A spurs provide a fused outlet to a ring mair where device such as a clock must not be switched
- off in flex switches with neon on/off lights, saves leaving things switched on 6v. 1A mains transformers upright mounting with
- BD9 fixing clamps

BD2

BD7

BD11

RD32

RD42

BD45

BD49

BD149

BD180

BD263

BD268

BD305 BD667

BD553a

- 6½" speaker cabinet ideal for extensions, takes your speaker. Ref BD137 + 50p.
- 30 watt reed switches, it's surprising what you can make with these - burglar alarms, secret switches, relay etc. etc.
- ches, relay etc. etc. 25 watt loud speaker two unit cross-overs 8.0.A.C. stereo unit is wonderful breakdown value nicad constant current chargers adapt to charge BD22 BO29 BO30 ż
 - almost any nicad battery humidity switches, as the air becomes damper the membrane stretches and oeprates a microswitch 2
 - membrane stretches and oeprates a microswitch 13A rocker switch three tag so on/off, or change over with centre off 24hr time switch, ex-Electricity Board, automati-cally adjust for lengthening and shortening day.
 - neon valves, wit good night lights mini uniselector, one use is for an electric jigsaw
- BD56 puzzel, we give circuit diagram for this. One pulse nto motor. moves switch through one pole
- flat solenoids you could make your multi-tester read AC amps with this BD59 BD67
- read AL amps with this suck or blow operated pressure switch, or it can be operated by any low pressure variations such as water level in water tanks 6v 750MA power supply, nicely cased with input and output leads BD103A
- stripper boards each contains a 400v 2A bridge rectifier and 14 other diodes and rectifiers as well BD120
- as dozens of condensers etc very fine drills for p.c.b boards etc. Normal cost 10 BD128 about 80p each
- about 8up each plastic boxes approx, 3" cube with square hole through top so ideal for interrupted beam switch motors for model aeroplanes, spin to start so 2 BD132 10 BD134
 - needs no switch 6 microphone inserts - magnetic 490 ohm also act
- BD139 as speakers reed relay kits you get 16 reed switches and 4 coil sets with notes on making c/o relays and other as speakers 4 BD148
 - gadgets safety cover for 13A msockets prevent those 6
 - inquisitive little fingers getting nasty shocks
 6 neon indicators in panel mounting holders with
- BD193
- RD196 BD199
- lens
 5 amp 3 pin flush mounting sockets makes a low cost disco panel need cable clips
 1 in flex simmerstat keeps your soldening iron etc always at the ready
 1 mains solenoid very powerful has 1" pull or could push if modified
 8 keyboard switches made for computers but have many other applications
 1 electric rock mains operated but this in a how and BD201
- electric clock mains operated put this in a box and BD211
- you need never be late

 12v alarms make a noise about as loud as a car
 hom. Slightly solid but UK

 6" × 4" speakers 4 ohm made from Radiomobile BD221
- BD242
- so very good quality panostat, controls controls output of boiling ring from BD252 simmer to hoil
- leads with push on 1/4" tags a must for hook ups 50 BD259 mains connections etc
 - oblong push switches for bell or chimes, these can mains up to 5 amps so could be foot switch if fitted into pattress
 - mini 1 watt amp for record player. Will also change speed of record player motor 3
- mild steel boxes approximately $3'' \times 3'' \times 1''$ deep BD283 standard electrical 50 mixed silicon diodes 1 tubular dynamic mic 2 4.7uf, non-polarise BD293 tubular dynamic mic with optional table rest 4.7uf, non-polarised block capacitors, pcb
- BD400
- mounting

 Books: Useful for beginners. Describes amplifiers, test equipment and kit sets

 Miniature driver transformers. Ref. LT44, 20k to BD653 1k, centre tapped
 2 3.5 volt operated relays, each with two pairs CO

There are over 1,000 items in our Bakers Dozen List. If you want a complete copy please request this when ordering

EQUIPMENT WALL MOUNT. It is a multi-adjustable metal bracket that could be used for mounting flood light, loud spacker, TV camera, even a fan and on almost any sort of wall or ceiling even between wall and ceiling. The main fixing brackets rotate such that an inward or an outward corner can be accommodated Front panel also tilts upwards or downwards to a reasonable angle and can be assily removed separately for wiring. A very useful bracket, Regular price would be around £6 each. Our price only £3 Our ref 3P72. Or 2 for £5. Our ref 5P152

EXTRA SPECIAL CROC CLIPS. Medium size, just right for most hook-ups Normally sell for around 10p to 15p each. These are insulated and have a length of wire connected to them but this is very easy to snip off if you do not need it. 20 for

COPPER CLAD PANEL for making PCB. Size approx 12in long \times 8^{1} /zin wide Double-sided on fibreglass middle which is quite thick (about 1/16in) so this would support quite heavy components and could even form a chassis to hold a mains transformer, etc. Price \$1 each. Our ret B0683.

FET CAPACITOR MICROPHONE EAGLE C1.200 Output equivalent to a high class dynamic microphone while retaining the characteristics of a capacitor microphone. Price £1. Our ref B0646

SUB-MAN TOGGLESWITCH Body size 8mm × 4m chrome dolly fixing nuts. 3 for £1.00 Order ref BD649. 4mm × 7mm SBDT with

POWERFUL IONISER

Generates approx. 10 times more IONS than the ETi and similar circuits. Will refresh your home, office, shop workroom etc. Makes you feel better and work harder – a complete mains operated kit, case included £12.50 + £2 P&P. Our ref 12P5/1.

REAL POWER AMPLIFIER for your car, it has 150 watts output. Frequency response 20thz to 20Khz and signal to noise ratio, better than 60 d/b. Has built in short circuit protection and adjustable input level to sur your existing car stereo, so needs no pre-amp. Works into speakers. Ref. your existing car stereo, so needs no pre-amp. Works into speakers. He 30P7 described below. A real bargain at only £57.50. Order ref: 57P1.

REAL POWER CAR SPEAKERS. Stereo pair output 100w ea A-Ohm impedence and consisting of 61/2" woofer, 2" mid range and 1" tweeter. Each set in a compact purpose built shelf mounting unit. Ideal to work with the amplifier described above. Pric eper pair £29.96. Order ref:

STEREO CAR SPEAKERS. Not quite so power – 70w per channel. 3" woofer, 2" mid range and 1" diameter. Again, in a super purpose built shelf mounting unit. Price per pair: £27.95. Order ref: 28P1.



ELECTRONIC SPACESHIP. Sound and impact controlled, responds to daps and shouts and reverses when it hits anything. Kit with really detailed instructions. Ideal present for budding young electrician. A youngster should be able to assemble but you may have to help with the soldering of the compoon the pcb. Complete kit £8. Out nef 8P30

12" HIGH RESOLUTION MONITOR. Black and white screen, beautifully cased for free standing, needs only a 12v 1.5 amp supply. Technical data is on its way but we understand these are TTL input. Brand new in maker's cartons. Price: £25.00 plus £5 insured delivery, Order ref: 25P10.

14" COLOUR MONITOR made by the American Display Tek company. Uses high resolution tube made by the lamous Japanese Toshiba company. Beautifully made unit intended for console mounting, but top and sides adequately covered by plated metal panels. Full technical spec. on its way to us. We have a limited number of these. All brand new still in maker's cartons. Price: £89 each plus £6 insured carriage. Order reff: 699/1. riage. Order ref: 89P/1.

BUSH RADIO MIDI SPEAKERS. Stereo pair. BASS reflex system, using a hull range 4in driver of 4 ohms impedance. Mounted in very nicely made black fronted wainut finish cabinets. Cabinet size approx 8 ½m wde, 14in high and 3½m deep. Fitted with a good length of speaker flex and terminating with a normal audio plug. Price £5 the pair plus £1 post. Our ref

31/zin FLOPPY DRIVES. We still have two models in stock: Single sided, 80 track, by Chinon. This is n the manufacturers metal case with leads and ICD connectors. Price £40, reference 40P1 Also a double sided, 80 track, by NEC. This is uncased. Price £59.50, reference 60P2 Both are brand niew. Insured delivery £3 on each or both.



ATARI 65XE COMPUTER

At 64K this is most powerful and suitable for home and business. Brand new, complete with PSU, TV lead, owner's manual and six games. Can yours for only £45 plus £3 Insur delivery.

REMOTE CONTROL FOR YOUR 65XE COMPUTER. With this outfit you can be as much as 20 feet away as you will have a joystick that can transmit and a receiver to plug into and operate your computer and TV. This is also just right if you want to use it with a big screen TV. The joystick has two fire buttons and is of a really superior quality, with four suction cups for additional control and one handed play. Price £15 for the radio controlled pair. Our ref 15P27.

65XE COMPENDIUM. Containts: 65XE Computer, its data recorder XC12 and its joystick, with ten games, for Σ 62.50 plus Σ 4 insured delivery

ASTEC PSU. Mains operated switch mode, so very compact. Outputs: +12v.2.5A, +5v.6A, $\pm5v.5A$, $\pm12v.5A$. Size: 7^{1} 4in long \times 4^{3} 4in wide \times 2^{3} 4un high. Cased ready for use. Brand new. Normal price $\Omega = 0$, our price only $\Omega = 0$.

VERY POWERFUL 12 VOLT MOTOR. 1/2rd Horsepower. Made to drive the Sinclair CS electric car but adaptable to power a go-kart, a mower, a rail car, model railway, etc. Brand new. Price £20 plus £2 postage. Our ref 20P22.

PHILIPS LASER

This is helium-neon and has a power rating of 2mW. Completely safe so long as you do not look directly into the beam when eye damage could result. Brand new, full apec, 230 plus 23 insured delivery. Mains operated power supply for this tube gives 8fv striking and 1.25kv at 5mA runniful Complete kit with case £15, ditto for 12v battery. Also £15.

ORGAN MASTER. Is a three octave musical keyboard. It is beautifully made, has full size (piano size) keys, has gold plated contacts and is complete with ribbon cable and edge connector. Can be used with many computers, request information sheet. Brand new, only £15 plus £3 computers, request into postage. Our ref 15P15.

FULL RANGE OF COMPONENTS at very keen prices are available from our associate company SCS COMPONENTS. You may already have their catalogue, if not request one and we will send it FOC with hour confidence.

HIGH RESOLUTION MONITOR, 9in black and white, uses Philips tube M24/306W, Made up in a lacquered frame and has open sides. Made for wearth OPD computer but suitable for most others. Brand new, £16 plus £5 post. Our reference 16P1.

12 VOLT BRUSHLESS FAN, Japanese made. The popular square shape (4^12 in \times 4^12 in \times 1^34 in). The electronically run fans not only consume very little current but also they do not cause interference as the brush type motors do. Ideal for cooling computers, etc., or for a caravan. £5 each. Our ref 8P26.

MINI MONO AMP, on p.c.b. size 4" × 2" (app.) Fitted volume control and ahole for a tone control should you require it. The amplifier has three transistors and we estimate the output to be 3W rms. More technical data will be included with the amp. Brand new, perfect condition, offered at the very low price of £1.15 each of 13 for £12.00

J & N BULL ELECTRICAL Dept. T.V., 250 PORTLAND ROAD, HOVE.

DEPL. 1.V., 250 PORTLANC ROAD, HOVE, BRIGHTON, SUSSEX BN3 50T.

MAIL ORDER TERMS: Cash, P.O. or cheque with order. Orders under £20 add £2.00 service charge. Monthly account orders accept from schools and public companies Access & Bicard orders are accepted – minimum £5 Phone (6273) 734648 or 203500.

POPULAR ITEMS - MANY NEW THIS MONTH

TELESCOPIC FM AERIAL. Stands up or folds over Solidly constructed and heavily nickel wlated. Supplied complete with fixing nut. Price £1 each Order ret 80717

TELEPHONE TYPE KEY PAD. Really first class rear mounting unit. White lettering on hlack buttons. Has conductive rubbers contacts with soft click operation. Circuit arranged in telephone type array, Requires 70mm by 55mm cut out and is connected by 10-pin IDC socket. Price: 52.00 each. Order ref 2P251.

JOYSTICKS for BBC, Atari, Dragon, Commodore, etc. All £5 each. State which

SUB-MIN PUSH SWITCHES. Not much bigger than a plastic transistor but double pole. PCB mounting. Three for $\mathfrak{L}1$ Our ref BD688

CARTRIDGES for the Double Microdrive. Price 4 for £5. Our ref 5P146

NICAD CHARGER UNIT. Metal pronged, plastic case contains mains transformer and rectritiers with output lead and plug – made to charge two cells but no doubt adaptable or wonderful spares value. Only 50p each, two for £1. Our ref DB385.

EDGEWISE PANEL METER. If you are short of panel space then this may be the answer. It thas a FSD of 100,µ4 you are short of panel space then this may be the answer. If $\frac{1}{2}$ Another feature is that it has an indicator lamp behind the scale which you could light up, it would then serve as an onvolf indicator. Price £1. Our ref BD-700.

AA CELLS. Probably the most popular of the rechargeable NICAO types, 4 for £4.

COMPUTER SPECIAL. The Perex 16meg Byte tape streamer. These are brand new and mally an exceptional bargain. A few only so hurry. Only £15. Our ref 15P29.

20WATT 400HM SPEAKER. With built-in tweeter. Really well made unit which has the power and the quality for hi-fi reproduction. 6^1 /2in diameter. Price Σ 5. Our ref Σ 7155 it is heavy so please add Σ 1 to cover postage if not collecting.

MINI FABIO MODULE. Only about 2in square with ferrite aenal and solid dia tuner with its own knob. It is a superhet and it operates from PP3 battery and would drive a crystal headphone direct but be better with our mini mono amp. Price £1.

BULGIN MAINS PLUG AND SOCKET. The old faithful 3 pin with screw terminals. The socket mounts through a $1^{1/2}$ n hole and the mains is brought in by the insulæed plug. Used to be quite expensive but you can have 2 pairs for £1 or 4. of either glug or socket for £1. You could make yourself a neat and compact bench panel with these. Our ref BD715, BD715S or BD715P

MICROFHOME. If you want a low cost microphone then just arrived we have a very small hand-held dynamic mic with orvoff switch in the handle, its lead terminates with one 3.5 plug and the other a 2.5 plug for remote control. Price only £1 Our rel B0711.

EXTENSION CABLE WITH A DIFFERENCE. It is flat on one side making it easy to fix and to look tidy. It is 4 core so suitable for telephone, bell, burglar alarms, etc. 50 % and coil for £5. Our ref 5P153.

MOSFETS FOR POWER AMPLIFIERS AND HIGH CURRENT DEVICES, 140v pair made by the famous Hitachi Company. Reference 25K413 and its bliment 25J118 Only £4 the pair. Our ref 4P42.

BATTERY OPERATED TRAVEL MECHANISM. On a plastic panel measuring approx 9in x 31/zin, 1s driven by a reversible 12v battery motor, fitted with pulley and belt which rotates a threaded rod and causes a platform to travel backwards and forwards through a distance of approx 5in Price £5. Our rel 5P140.

MAINS OPERATED WATER VALVE with hose connection for inlet and outlet suitable for low pressure. Auto plant watering, etc. Only £1 each Our ref BD370.

20 VOLT 4AMP MAINS TRANSFORMER. Upnght mounting with fixing feet. Price £3. Our ref 3P59.

16 OHM PM SPEAKERS. Approx $7\text{in} \times 4\text{in}$. 5 watts. Offered at a very low price so you can use two in parallel to give you 10 watts at 8 ohms. £1 for the two. Our ref 80584

FHT TRANSFORMER 4ky 2mA Ex-unused equipment 55. Our ref 5P139

4 CORE TINSEL COPPER LEAD. As fitted to telephones, terminating with flat BT

EHT TRANSFORMER, 8kv 3mA £10. Our ref 10P56

VERT USEFUL MAGNETS. Flat, about 1in long, ½2in wide and ¼in thick. Very powerful. 6 for £1. Our ref BD274(a)

ACORN COMPUTER DATA RECORDER. Ref ALF03 Made for the Electron 8BC computers but suitable for most others. Complete with mains adaptor, let and wandbook £10.00. Ref 10P44. Add £2 special packing

SOLAR CELLS, Will give a good current (depending on size) from sunlight or bright daylight, Module A gives 100mA, Price £1. Our ret BD631, Model C gives 400mA, Price £2. Our ret 2P199, Module D gives 700mA, Price £3. Our ret 3P42.

SOLAR POWERED NI-CAD CHARGER 4 NI-CAD batteries AA (HP7) charged in eight hours or two in only 4 hours. It is complete, boxed ready to use unit 26. Dur Ref. 6P3.

METAL PROJECT BOX. Ideal size for battery charger, power supply etc; sprayed grey, size $8^{*} \times 4^{1}/4^{*} \times 4^{*}$ high, ends are louvered for ventilation other sides are flat and undrilled. Price $\mathfrak{L}3$. Order Ref. 3P75.

13a PLUGS. Sleeved and complete with fuse, parcel of 5 for £2. Order Ref.

CAPACITOR BARGAIM – axial ended – 4700uf $(a~25v~{\rm Jap}$ made. Normally 50p each, but you will get 4 for $\mathfrak L1~{\rm Ref}~613$

SINGLE SCREENED FLEX 7 02 copper conductors, pvc insulated then with cooper screen, finally outer insulation. In fact quite normal screened flex 10m for \mathfrak{L}^1 Our ref BD668.

3 CORE FLEX BARGAIN No. 1 – Core size 5mm so ideal for long extension leads carrying up to 5 amps or short leads up to 10 amps. 15mm 52 Ref. 2P189

3 CORE FLEX BARGAIN No. 2 — Core size 1 25mm so suitable for long extension leads carrying up to 13 amps — or short leads up to 25A, 10m for £2 Order Ref. 2P190

ALPHA-NUMERIC KEYBOARD - this keyboard has 73 keys with contactless capacitance switches grung long trouble free life and no contact bounce. The keys are arranged in two groups, the main area field is a OWERTY array and on the right is a 15 key number pad, board size is approx. 13" × 4"—brand new but offered at cmly a fraction of its cost namely £3, plus £1 post. Ref. 3P27

*faTH HORSEPOWER 12 VOLT MOTOR. Made by Smiths, the body length of the sproximately 3in, the diameter 3in and the spindle 3/16th of an inclidimeter. It has a centre flange for fixing or can be fixed from the end by means of ituits. A very powerful little motor which revs at 3,000 rpm. We have a larginguantity of thems of you have any projects in mind then you could rely on supplies for at least two years. Price £6. Our ref 6P1, discount for quantities of 10 or more



CORNWALL



VISIT OUR OTHER BRANCHES: **SUPERTRONICS** 65 HURST STREET. **BIRMINGHAM B5 4TE**

WALTONS

55A WORCESTER STREET, WOLVERHAMPTON WV2 4LL

Tel: 0902 22032

PLEASE NOTE - ALL PRICES NOW INCLUDE 15% VAT

1989 Catalogue — over 200 pages incl. Credit Tickets (3), Special Offer sheets, Prepaid Envelope & Order Form — £1, or free on application with orders of £15 and over. Prices in Catalogue may vary as material for advert is prepared 6/8 weeks before issue.

NEW LINE CD HEADPHONES



Tel: 021-666 6504

STEREO HEADPHONES
Lightweight superdynamic headphones with samarium cobalt
mylar transducers designed for
use with Compact Disc. Swivelling earcups fit comfortably and exactly on the ears. Ratchet ac justable tough plastic headband All black finish.

PRICE: £6.99

185gm POWER 32Ω LEAD 20-20000Hz PLUG

6.35mm

WEIGHT IMPEDANCE RESPONSE QUARTZ-HALOGEN SPOTLIGHT

UNANTZ-TRALDUCKY OF DIFLICITY

and held of hanging. Reat resistant poly carbonate housing, highly polished reflector. Protective lens covering to the country of the work of the country of the work of the country of the work of the country of the



12V Twin **Fluorescent** Lamp

ribbed perspex diffuser. On/off switch. 3tt cable. v. Keyhole fixing. 12V D.C. 8W Tubes. Dimensions: 368 × 67 × 43 mm Ideal for Caravans, Boats, Vans etc.

10+ £5.99 £4.99

12 VOLT RECHARGEABLE UNIT



10 × D × Size Ni-Cads (4 Ah) encapsulat in a black plastic case. Fuse holder. Gives volt Output when charged. Ex-equipme Fully guaranteed. Dimensions: 245 × 75 75mm.

£9.19 each + P&P £1.85 £8.34 for 10 + P&P £4.50

CHARGING UNIT FOR THE ABOVE 12V UNIT

Manufactured by Saft, these chargers are suitable for the above battery packs obvertised in the May issue of WHAT VIDEO — Page 60 The chargers are stated where the work of the chargers are stated he packs is obtained after 10 12 hours (overnight) harging. Supplied complete with main lead and harging flead thitled with a 4 pm plug (6-pm plug resono available upon requise). Afthough tex-rupup nert, these chargers are fully tested and guaranteed.

Amenions 35 24 25 26 3 150 mm.



OSCILLOSCOPES

TEKTRONIX D755 - 50 meg. Solid State.
Price £295.00 incl. V.A.T. Carriage £12.00

| | | THE PERSON NAMED IN CO. | |
|---|---------------------------|--|--|
| SOLDERING SECTIO Soldening Gun Kit. – 100W Pistol complete with 2 Tips, Solder & Paste XS25 W Iron kit/complete with Im lead & plug attached CS11 fron Kit. C15 Iron Kit. | Type - Solder 15.99 | Antex 15W iron Antex 18W iron Aufax 25W iron Aufax 25W iron Antex elements Antex bits Antex stands Solfersucker Spare nazzles for Soldersucker | 7.65 7.75 7.85 3.75 1.60 2.99 3.44 0.68 |
| ORVX PORTAS | OL G | AS SOLDERING IRON | |

- 1, 2.4, 3.2, 4.8mm £5.50 each SOLDER: 60% TIN 40% ALLOY

| 18g. Non-corrosive Multi-core Solder. | 500gm Reel £6.25 each. |
|--|---|
| RESISTOR KITS eac us individually | packed * |
| 1/4W pack 10 each value E12 + 10R to 1M 61 1/4W pack 5 each value E12 - 10R to 1M 305 | 0 pieces 5.10 pieces 3.75 |
| 1/4W pack Popular - 10R to 10M 1000 pieces | 6.99 |
| 1/2W pack 10 each value E12 - 2R2 to 2M2 7 1/2W pack 5 each value E12 - 2R2 to 2M2 36 | 5 pieces 5.40 |
| 1/2W pack Popular - 2R2 to 10M 1000 pieces 1W pack 5 each value E12 - 2R2 to 1M 365 | |
| 2W pack 5 each value E12 - 10R to 2M2 317 | pieces 15.25 7 pieces 25.00 |
| ADDITIONAL KITS | X 477 25 25 25 37 37 37 37 37 37 37 37 37 37 37 37 37 |
| DIGG GERALES AND | |

| THE POOR & COURT FORCE CITE TOTAL TO STAIL | 317 pieces | 25.00 |
|--|--------------------|-------|
| ADDITIONAL KITS | 100 F 7 2 10 12 14 | T WES |
| DISC CERAMIC 50V | 125 pieces | £3 99 |
| ZENER DIODES 5ea | 55 pieces | |
| ELECTROLYTICS CAPS, RADIAL | 100 pieces | £8.50 |
| FUSES Q/BLOW 20mm | 80 pieces | £4.75 |
| FUSES T/DELAY 20mm | 80 pieces | £8.50 |
| PRE-SET POTS Hor. | 120 pieces | £7.75 |
| PRE-SET POTS.vert. | 120 pieces | £7.75 |
| DT ADDDOVED FOR | 445000000 | |

| Master Socket (Flush) | £3.30 | Winno Tool | 0.35 |
|--------------------------------|-------|--------------------------------|--------|
| Master Socket (Surface) | £3.25 | Plug 431A | 0.35 |
| Secondary Socket (Flush) | £2.05 | Slimtel Phone | £19.95 |
| Secondary Socket (Surface) | £2.50 | Betacom Flaminge Phone | £9.95 |
| B.T. Cable (per metre) 15 1800 | | Cordless Phone - Freeway | £89.95 |
| Line Jack Cord with Plug | £2.20 | Conversion Krt & Winng Diagram | £9.50 |
| Extr. Lead 5 metres | £4.30 | | |

FM TRANSMITTER

Very High Quality 'MINI-BUG' - Ideal for Baby Alarm etc.!! BBDy Alarm etc.!! 4 Very good range is obtainable – we have obtained over 2 mile, but it does depend on conditions. Simply remove cover – insert battery – and you're ready to

go **Reception can be obtained on any FM Radio. Frequency 105-109 MHz FM Power: PP3 SV Battery (not included). Dimensions: 425° × 225° × 0.75°. Order Code – S0/034



Price: £9.99

JUST ARRIVED

BRAND NEW — SURVEILLANCE EQUIPMENT

TYPE 1: Camera, Monitor, Camera Bracket, 40m Lead — Ready to use.

PRICE: £149.99 Carriage: £15.00

TYPE 2: Identical to the above camera but with Built-in Intercom.

PRICE: £199.00 Carriage: £15.00

| | | | , | | |
|---------|-----------|--------------------|-------|-----------------|------|
| VALVES | | EF85 | 0.50 | BCUOO | 1 |
| VALVES | l | EF86 | 2.65 | PCH200 PCL82 | 1.45 |
| _ | | EF95 | 0.80 | PCL82 PCL83 | 1.35 |
| Туре | Price (£) | EF183 | 0.80 | PCLB3 | 2.95 |
| DAF96 | 0.70 | EF184 | 0.52 | PCL86 | 0.95 |
| DF96 | 0.72 | EH90 | 0.45 | PCL88 | 1.15 |
| DK96 | 3.10 | EL34 | 3.95 | PCL805 | 2.95 |
| DY86/87 | 0.80 | EL36 | 1.60 | PO500 | 1.20 |
| DY802 | 0.98 | ELB1 | 8.05 | PU500 PEL200 | 3.75 |
| E88CC | 4.75 | EL84 | 1.30 | P1.200 P1.33 | 1.15 |
| EABC80 | 0.85 | EL86 | 1.65 | PL33 P184 | 1.80 |
| EAF42 | 1.78 | EL509 | | | 1.20 |
| EB91 | 0.65 | EL519 | 7.25 | PL504 | 1.80 |
| EBC41 | 1.45 | EM80 | 7.25 | Pt.508 | 1.35 |
| EBC81 | 1.45 | EM84 | 1.50 | PL519/509 | 5.55 |
| EBF80 | | | 0.80 | PL802 | 8.40 |
| EBF83 | 0.60 | EM87 | 4.75 | PY81/900 | 1.35 |
| EBF89 | 1.35 | EY51 | 1.10 | PY88 | 0.85 |
| | 0.85 | EY86/87 | 0.85 | PY500A | 2.35 |
| EC92 | 2.10 | EY88 | 0.85 | PY801 | 1.35 |
| ECC81 | 1.75 | EY500A | 2.55 | UABC80 | 0.55 |
| ECC82 | 1.08 | EZ41 | 3.45 | UAF42 | 1.85 |
| ECC83 | 1.40 | GY501 | 1.65 | UBC41 | 2.90 |
| ECC84 | 0.65 | GZ32 | 245 | UBCIII | 2.65 |
| ECC85 | 1.20 | GZ34 | 3.80 | UCH4. | 2.45 |
| ECC86 | 3.25 | KT88 (GEC Mullard) | | UF4 | 1.50 |
| ECC88 | 1,50 | KT88 (Foreign) | 18.80 | ULSA | 1.05 |
| ECC189 | 1.75 | PC86 | 0.55 | UY41 | 3.85 |
| ECF80 | 1.35 | PCC84 | 0.50 | UY85 | 0.95 |
| ECF62 | 1.35 | PCD85 | 0.92 | ZD21 | 2.65 |
| ECF83 | 2.25 | PCC88 | 0.85 | 6AU6 | 1.69 |
| ECH35 | 4.35 | PCC89 | 0.85 | 6BA6 | 1.45 |
| ECH42 | 1.75 | PCC189 | 0.85 | BBE6 | 2.20 |
| ECH81 | 1.15 | PCF80 | 1.35 | 604 | 1.20 |
| ECL80 | 0.80 | PCF82 | 0.75 | 6K7G . | 3.05 |
| ECL82 | 2.11 | PCF86 | 1.35 | 6X4 | 3/75 |
| ECL83 | 3.80 | PCF87 | 1 35 | 12AU6 | 3.20 |
| ECL84 | 1.25 | PCF200 | 2.75 | 12AV6 | 1.35 |
| ECL85 | 1.20 | PCF800 | 1.05 | 30FL2 | 2.00 |
| ECL86 | 125 | PCF801 | 1.50 | 30PL1 | 1.95 |
| EF37A | 4.25 | PCF802 | 1.10 | FULL RANGE | |
| EF80 | 0.50 | PCF805 | 1.65 | IN CATALOGUE | E |

| SERVICE AIDS | | ALTER MALE | | Ī |
|------------------------|----------|-----------------------------|------|---|
| Goldkiene Degreasing | | Super 40 | 2.25 | |
| Solvent | 2 19 | Silicone Grease-Tube | 2.25 | |
| Switch Cleaner Lub | 1.50 | Silicone Grease-Spray | 1.85 | |
| Supa Freeze-it | 1.88 | Heat Sink Compound | 1.45 | |
| Foam Cleanser | 1.50 | Solda-Mop | - | |
| Video/Tape Head Clear | ner 1.30 | Light Guage 0.08mm | 0.98 | |
| Plastic-SCal | 1.75 | Standard Gauge 1.2mm | 0.96 | |
| Aero-Klene | 1.38 | Industrial Reel 1.2mm | 3.65 | |
| Anti-Static Spray Mist | , 1.50 | Drive Cord | 2.99 | |
| Excel Polish | 4.36 | Super Glue | 0.99 | |
| Elece. Condutive Paint | 3.55 | Insulating Tape 25p/1 20p.e | | |
| Aero Duster | 1.99 | Parcel Tape 99p/1 85p.ea | /10 | |
| 20 CLIDED | | | _ | |

| 20mm FUSES | C. 27 5 E |
|---|------------------|
| QUICK BLOW - 80mA, 100, 125, 160, 200, 250, 315, 400, 500 | 0, 630, 800, 1A. |
| 1.26, 1.5, 1.6, 2, 2.5, 3.15, 4, 5, 6.3 | 45p/10 |
| TIME DELAY - 50mA, 60, 80, 100, 125, 160, 200, 250, 315, | 400, 500, 630, |
| 809, 1A, 1.25, 1.6, 2, 2.5, 3.15, 4, 5, 6.3, 10 | 1.20/10 |

| 800, 1A, 1.25, 1.6, 2, 2.5, 3.15, 4, 5, 6.3, 10 | 200, 315, |
|---|---------------|
| 1" DOMESTIC MAINS FUSES | Giotio |
| 2A. 3A. 5A. 13A | - 10. |
| 1 1/4" QUICK BLOW FUSES | - N. T. LEW |

| Iniversal | 1+ | £4.99 each |
|--------------|-----|------------|
| RICE: | 10+ | £4.75 each |
| × AA Charger | | £4.95 each |

1A 1 25A, 2A, 120

| NI-CAD BA | TTERIES | |
|----------------------------|-------------------------------|---|
| AAA AA C D PP3 | 95 ea £1.95 ea £2.00 ea | £1.30 ea/10 .85 ea/10 £1.80 ea/10 £2.20 ea/10 £3.75 ea/10 |

| BOOKS | 100 | |
|---------------------------------------|--------|--|
| DATA VOLUME 1 - Trans data & drawings | | |
| A BUY | £9.99 | |
| DATA VOLUME 2 – as above €-Z | £10.75 | |
| DATA VOLUME 3 - 2N 2N6735 | £10.20 | |
| Set of 4 | £42.00 | |
| DATA VOLUME 4 – 2SA & on | £13.50 | |
| DIODES VOLUME 1 | £10.75 | |
| DIQUES VOLUME 2 | £10.65 | |
| Both Volumes | £20.60 | |
| I.C. CMDS | £8.95 | |
| I C ITL | £19.50 | |
| I.C LIN VOLUME 1 | £6.95 | |
| I C LIN VOLUME 2 | £6.99 | |
| Both volumes | £13.00 | |
| THYRISTORS A to Z | £10.45 | |
| TRANSISTORS A to Z | £6.90 | |
| TRANSISTORS 2N 3N | £7 00 | |

Both volumes £13.00
Full range of BABANI Books on TV/RADIO/AERIALS
Etc. e.g.
INTRODUCTION TO SATELLITE YV. £5.95 Fane Loudspeaker enclosure Design & Constru £3.99

Ill range of WIREWOUND RESISTORS now it stock 25W/4W/7W/11W/17W/25W/50A/

| | VIDEO H | EADS | MATIONAL (Co | nt.) |
|----|----------------|---------|------------------|----------|
| | AKAI | 48 50 | NV7850 | £19.99 |
| | VP-77 | €19.99 | NV8170 | E19.99 |
| | VP-88 | £19 99 | NV8200 | £19.99 |
| | VP-7100 | £19.98 | NV8400 | £19.99 |
| | VS-1 | £19.99 | NV8600 | £19.99 |
| | VS-2 | €19.99 | NV8610 | £19.99 |
| | VS-3 | £19.99 | ORION | |
| | VS-5 | £19.99 | VH-1 | £19.99 |
| | VS-III | £19.99 | VH-2 | £19.99 |
| | VS-77 | £19,99 | V1172 | £13.33 |
| | VS-9300 | £19.99 | PHILIPS | |
| | VS-9500 | £19.99 | VR-6460 | F29.99 |
| ٦ | VS-9700 | £19 99 | V8 6520 | £79.99 |
| | VS-9800 | £19.99 | 4.00 | |
| | FERGUSON | | SANYO | |
| | 3V00 | £19 99 | VTC 3000 | 29.99 |
| | 3V0) | £19.98 | VTC-5080 | £45.00 |
| | ±3∨16 | £19.99 | VTC 5500 | 1.45.00 |
| | 3V22 | £19.99 | SHARP | |
| | 3V23 | £19.99 | VC200/300:482/33 | inn/nto |
| | 3V24 | £19.99 | 9300/9400/9500/9 | 606/9700 |
| ۲, | 3V29 | £19 99 | | £30.99 |
| | 3V30 | £19.99 | VC381/384/385/38 | 6.297/ |
| | 3V31 | £19.99 | 388/481 | £28.50 |
| | 3V35 | £19.99 | 1 | 120.30 |
| | 3V36 | £19.99 | SONY | - 40 |
| | 3V38 | £19 99 | ST-C5 | £22.50 |
| | 3V39 | £19.99 | SL-Q6 | 227.50 |
| | 8903 | £13.99 | SL-C7 | £22.50 |
| | FISHER | 1500 | SL-C9 | £48 60 |
| | FVE-P615 | €40.50 | St-Cau | £34.50 |
| | FVE-P910 | £40.50 | St C24 St- 30 | E34.50 |
| | - | 2.40.30 | SL-C33 | £34.50 |
| à | GRUNDIG . | | SL C44 | (34.50 |
| | Full range nov | | SL-F1 | £34.50 |
| | PHONE FO | R PRICE | SL-F30 | £34.50 |
| | HITACHI | 100000 | SL-3000 | €28.50 |
| | VIII | (29.99 | SL-8000 | £28.50 |
| ٦ | VT14 | 29.99 | SL-8060 | £28.50 |
| | VT33 | 229.99 | 4000 | |
| | VT34 | £29.99 | TELEFUNKEN | POA |
| | VT3000 | £29 99 | THOMSON | P0A |
| | VT4000 | £29 98 | 1110M20M | PUA |
| | VT4200 | £29 99 | TOSHIBA | |
| | VT5000 | £29.99 | V31 | £35,00 |
| | V16500 | £29.99 | V33 | £35.00 |
| | MERCHAN | | | |

| VT7000 VT8000 VT9500 VT9000 | £29,99 £29,99 £29,99 £29,99 | V56 V57 V5470 V9600 | £19.99 £19.99 £29.99 £35.00 |
|--|--|---|--|
| VT9300 VT9500 VT9700 VT9900 | £29.99 £29.99 £29.99 £29.99 | REMOTE HANDSETS AMSTRAD | |
| JVC HR0110E HR0110EG HR0111 HR0120 HR0121 HR0225 | £19.99 £19.99 £19.99 £15.99 £19.99 | CTV1409 CTV2200 CTV2210 TV:VID:TVR1 VCR5200 VCR7000 VCR9000 | £17.50 £17.50 £17.50 £17.50 £20.00 £12.00 £12.00 |
| HR2200 HR3300 HR3660 HR4100 HR7200 HR7600 HR7610 | £19 99 £19 99 £19 99 £19 99 £19 99 £19 99 | DECCA 80/10 NON TEXT (RCI) 101 NON TEXT FERGUSON | £24.50 £27.50 |
| HR7650 HR7700 MITSUBISHI | £19.39 £19.39 £19.19 | TX9/10 NON TEXT TX9/10 TEXT TX9/10 TEXT/STERED | £15.95 £15.95 |
| | | | |

£19.39 MITSUBISHI Full range now availal PHONE FOR PRICE

£1.20/10

50p/10

3

HEIPING

WITH MAGNIFIER GLASS LENS PLASTIC LENS 450

SAFEBLOC

MAINS VOLTAGE QUICK TEST £9.99

POWER

SUPPLY

D.C. to D.C. adapte Plugs into car ciga lighter socket.

Outputs 3, 4.5, 6, 7.5, 9, 12V (ii 800mA. Has universal output

spider plug, also 9V battery snap and

polarity reversing facility

ORDER CODE CAR/PSU/1

PRICE:

£2.75

| N830 | £1 |
|----------|---------|
| NB31 | £1 |
| N832 | £1 |
| N833 | E |
| PVC-2300 | £ |
| PVC-2400 | £2 |
| NATIONAL | PANASON |
| NV100 | 62 |
| NV230 | FA |

| 1 | PVC-2400 | 1,21,95 |
|---|----------|-----------|
| ı | NATIONAL | PANASONIC |
| ı | NV100 | £29.95 |
| ı | NV230 | £42.50 |
| ı | NV300 | £19.99 |
| ł | NV322 | £19.99 |
| 4 | NV330 | £42.50 |
| ı | NV333 | £19.99 |
| ı | NV340 | £19.99 |
| ı | NV366 | £49.99 |
| ı | NV370 | £29.99 |
| ł | NV380 | £29 99 |
| ı | NV430 | £27.99 |
| ı | NV450 | £42.50 |
| ı | NV470 | £42.50 |
| ı | NV480 | £42.50 |
| ł | NV730 | £48,95 |
| ŀ | NV2000 | £19.99 |
| п | 80/2000 | C10.00 |

| 7.33 | I GRUNDIG | |
|------|------------------|--------|
| 9.98 | TP400 TELETEXT | £15.95 |
| 9.90 | TP400 NON TEXT | |
| 9.99 | | 213 33 |
| 1.96 | ITT | |
| 1.95 | RG305 | £15.95 |
| | RG306 | £15.95 |
| IIC | | |
| 9.99 | JVC | |
| 2.56 | 3V23 | £15.95 |
| 9.99 | 3V31 | £15.95 |
| 99 | 3V35 | £15.95 |
| 2.50 | | |
| 99 | PHILIPS | |
| 99 | G11 TEXT | £15.95 |
| 99 | KT3/K30 TEXT | £15.95 |
| 1.99 | KT3/K30 NON TEXT | £15.95 |
| 199 | RC5 STD | £15.95 |
| .99 | | |
| 50 | CASSETTE | _ |
| .50 | LAMP | |
| | - UNIVERSAL | |
| .50 | OIALA ENIZACE | |

igth. 30cm. CODE. VID/LAMP 60p



| TOSHIBA V5 | | £3.99 |
|-----------------|--------------------------|------------------|
| IDLERS | | |
| FISHER | 143-0 4204-00400 | 3.85 |
| FISHER | GEAR IDLER 143-0-4904 0 | 0900 6.00 |
| FERG/JVC | TAKE UP IDLER PU51402/ | A 1.70 |
| HITACHI | 6886971 | 1.99 |
| PANASONIC | VXP 0344 | 2.30 |
| PANASONIC | VXP 0521 | 2.50 |
| SANYO | REEL DRIVE PULLEY VTC | |
| | 5150 143-0-662T-01201 | 6.50 |
| SHARP | NIDL 0005 GE22 | 1.90 |
| SHARP | NIDL 0006 GE22 | 2.10 |
| THORN/JVC | PU48967B | 2.99 |
| TRIPLERS | L W. S. P. E. S. Je | told. |
| TRIPLER Univers | sal | 5.75 |
| PHILIPS KT3 | | 8.50 |
| MOTORS | S. John St. W. Charles | 35 |
| Reel Motor SAN | YO VTC 5150 4 529V-10900 | 9.70 |

| | TRIPLER Universal PHILIPS ICT3 | 5.75 8.50 |
|---|--|--------------|
| | MOTORS | |
| | Reel Motor SANYO VTC 5150 4 529V-10800 Reel Motor SHARP VC9300/9800 RM0TV | 9.20 |
| | 1008 GE22 | 18.95 |
| | Capstan Motor - FERG/JVC 3V35 PU55371V/M | 27.50 |
| h | Audio Motor Recorder 12V CW 34mm | 4.20 |
| | Audio Motor 9V CW 34mm | 4.20 |
| | MAINS SWITCHES | N 8 8 |
| | PB3008 Decca/GEC | 0.99 |
| | SONY (Universal) | 4.05 |
| | | |

| MAINS SWITCHES | 4-3- |
|---------------------------|---------|
| PB3008 Decca/GEC | 0.95 |
| SONY (Universal) | 4.05 |
| PB5030 Rank Remote | 1.50 |
| PB3003 Philips G8 Plastic | 0.95 |
| PHILIPS KT3 (Remote) | 1.99 |
| 5031 PHILIPS G11 Remote | 1.40 |
| 285/1 ITT CVC5/CV20 | 1.40 |
| PB3005 PHILIPS G11 | 0.95 |
| THORN TX90 ODE2 158-001 | 0.95 |
| VIDEO BELT KITS | 101 642 |

| Albeoge | LI KIIS | |
|-----------|---------------------------|------|
| AKAI | VS 9300/9500 | 2.10 |
| FISHER | MOST | 2.50 |
| HITACHI | VT5000E/5500/3000 | 2.75 |
| | VT/7000/8000/8500/9300 | |
| | VT/9500/9700 VT11/VD88 | 1.50 |
| | VT11/VD88 | 3.75 |
| JVC/FERG | 3V00/3V22 | 2.10 |
| | 3V29/3V30 | 1.50 |
| JVC/THORN | 3V35/3V39 | 1.50 |
| JAC | 3300/3330/3360 | 2.10 |
| | 7200 | 2.00 |
| | 7600/7610/7650/7655 | 2.25 |
| NAT. PAN. | NV7000-7200-777/7800 | 1.75 |
| | NV ZULLE JEUL | 2.75 |
| | NV332/333/366 | 1.99 |
| | NV8600/8610 | 3.75 |
| SANYO | VTC5150/6000/5000 | 1.20 |
| | VTC9106/9300 | 2.80 |
| SHARP | 2300/381/384/385/ | |
| | 386/390/9300/9500 | 1.50 |
| | VC7300/7700/7750 | 1.75 |
| | VC6300 | 2.25 |
| SDNY | SLC5 | 2.05 |
| | St-O6 | 2.30 |
| | SL-C8000 | 2.30 |
| TOSHIBA | V31 & 33 | 6.30 |
| | V56 & 57 | 1.50 |
| | V66/67/9600 | 1.20 |
| | | |

RJLL RANGE OF CASSETTE PLAYER 0 RIVE BELTS:
19mm to 57mm Z5p; 8094mm Z5p;
100110mm Z5p; 8094mm Z5p;
100110mm Z5p; 8094mm Z5p;
100110mm Z5p; 8094mm Z5p;
100110mm Z5p; 8094mm
CASSETTE DRIVE BELTS: 121/210mm
8195mm S0peach

CASSETTE ORIVE BELTS: (WALKMAN TYPE) 30p

VIDEO HEAD TESTER



A VHS video head tester for determining whether a video head is in good condition by detecting the war state and displaying it on a meter Complete with carrying case and leads.

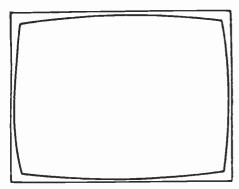
SPECIAL PRICE £35

SERVICE MANUALS SONY SL CS/6/7/9 FERGUSON VHSTJ1/3V00/HR3330EK

EAST CORNWALL COMPONENTS 119 HIGH STREET WEM SHROPSHIRE SY4 5TT TEL: 0939 32689

TELEX: 35565 FAX: 0939 33800

ORDERING: All components are brand new and to full specification. Please add £1.00 postage/packing (unless otherwise specified) to all orders Minimum order £5.00. Either send cheque/cash/postal order or send/ telephone your Access or Visa number. Official orders from schools, universities, colleges etc most welcome. (Do not forget to send for our catalogue - only £1,00 per copy). Delivery by return on ex-stock items. All prices subject to change without notice. RETAIL shop open Mon-Saf 9.00-5.00. Sat 9-12.00. REMEMBER ALL PRICES NOW INCLUDE VAT



EDITOR

John A. Reddihough

Please note that the telephone numbers below are for contact with the advertisement departments only. Editorial enquiries should be sent to the editor at the address given on page 1.

ADVERTISEMENT MANAGER

David W.B. Tilleard 01-261 6671

SECRETARY

Janet Reeve 01-261 6671

CLASSIFIED ADVERTISEMENTS

Pat Bunce 01-261 5942

ADVERTISEMENT COPY AND MAKE-UP

Ron Scorey 01-261 6035

SUBSCRIPTION ENQUIRIES

0444 440 421

CORRECTION

Our news item on Rumbelows last month was inaccurate: see correction on page 15.

HELD OVER

Due to shortage of space in this issue we have had to hold over the next instalment in the series on servicing Salora CTVs. We'll be back next month with the J series chassis.

COVER PHOTO

This month's cover photograph shows the Panasonic NV730B with the top cover removed. See article on pages 19-21.

TELEVISION

Strategy at Sony

The strange things that happen as firms evolve and grow never cease to amaze. We've commented on this subject before, in particular on the fashion of firms in the English-speaking world to become conglomerates during the Sixties and Seventies and then, more recently, to revert to the core-business strategy. The fascination is that some horrendous mistakes can occur when firms decide to become active in fields outside their traditional ones. Also when they stick to their own trade but venture abroad, as the sad case of the Midland's Bank's experiences in California after buying the Crocker Bank

This sort of question must be in many people's minds as they contemplate the recent, and initially somewhat puzzling, moves by Sony. The Sony Corporation, a comparative newcomer amongst the giants of the Japanese electronics industry, having been formed just after the war, first established a reputation as a superb innovator in the field of consumer electronics, with a long list of successful launches. It was inevitable that at some stage Sony would feel the need to venture into fresh fields. The initial moves, many years ago now, were logical and closely related to the company's original activities – it quickly established an enviable reputation in the fields of professional and broadcasting equipment. Subsequently it moved into industrial and office electronics, again a logical step into fields where similar technology is used. Last year Sony's fastest growing businesses were in computer disc drives, semiconductor devices and engineering work stations. What we have seen more recently however has been moves into quite different types of business activity – first records and now film and TV production.

different types of business activity – first records and now film and TV production. This latest strategy started when Sony, in 1987, bought the world's largest music recording company CBS Records for \$2 billion What would it do with CBS? The answer, for the time being, seems to let it be. There probably wasn't much else that Sony, lacking experience in the software side of the audio business, could do. It was a surprise move, but one has to recall that there is a long history of firms that combined home entertainment and the supply of the equipment required for it. One thinks in particular of EMI and Decca in the UK, RCA in the USA and Telefunken in Germany. When Decca was going through a rough period in the late Twenties it seemed logical to start supplying gramophones through the outlets that sold its records. We eventually had the famed Deccola, Deccalian and so on! And what more fitting in those days than to play HMV's superb shellac pressings on their equally excellent radiograms? But for some reason this strategy has long been abandoned in the West, where the electronics and music industries have gone their separate ways.

The tape era possibly once again made closer links between home entertainment software and hardware more logical. After all, if you can make the cassettes it's not a giant step to supplying them complete with the music. Sony's entry into the recording field has not been a high-profile one, rather a case of extracting whatever benefits there are from the business synergies. Sony's latest move, in taking over Columbia Pictures for \$3.4 billion, is seen by the company as being a development along the same basic path. It subsequently took over Guber-Peters Entertainment for \$200 million in a related move

Columbia gives Sony a large library, the fourth largest in the world, of visual software – some 2,700 films and 23,000 television shows. It has paid a high price for them however. In its last reported quarter, to May 1989, Columbia managed to make a profit of just \$400,000 on a turnover of over \$351 million. Hardly a huge success in business terms. In fact Columbia has been making substantial losses on its film making activities, the profit coming from its television production operations. Moreover the price Sony is paying for Columbia works out at a price-earnings ratio of 350, which is not staggering by some Japanese standards but is breathtaking by Western ones. You have to be pretty sure of the potential to pay that sort of price, yet Sony has no experience of programme making and, as with CBS Records, has announced its intention to leave matters in the hands of local management

There's no great secret in Sony's belief that being a major player in the film/TV programme making field will assist one of its main longer-term aims, to get 8mm video established as a successor to the 16mm VHS system. Beta lost out in the 16mm video systems war largely because JVC/Matsushita were quicker to licence out their technology and, once substantial libraries of VHS recordings had been established, no one was particularly keen to duplicate them in Beta form. Now Sony appears to feel that with major interests in the software side of the industry it will have a better chance of calling

the tune.

However this may work out, Sony has taken a considerable risk. With Columbia and CBS as subsidiaries, about a quarter of Sony's sales will be in the software field. This is a highly competitive field of which Sony has no direct experience. The entertainment industry is also extremely fickle in comparison to the relatively stable Japanese consumer electronics industry. Sony is paying for Columbia with a bridging loan, after which it will raise long-term funds. It can well afford this provided its other activities continue to make good profits – and the electronics side has been doing well following the difficult period of the overvalued yen in 1986-8. It will be interesting, to say the least, to see how Sony's strategy succeeds.

Teletopics

CHANNEL 5 COVERAGE

The Department of Trade and Industry has issued a map showing the anticipated coverage of the new Channel 5, which is expected to start broadcasting in 1993. One reason for the delay is that the Channel 5 franchise will not be awarded until after the present ITV franchises come up for renewal in 1992. Twenty five transmitters using channels 35 and 37 should enable Channel 5 to reach about seventy per cent of the population. Coverage is limited by the need to avoid interference to Irish, French and Belgian TV services. Areas that will not be covered include much of Scotland, Cumbria, Wales and the Welsh border area, a large part of Cambridgeshire/ Suffolk/Essex and most of the south coast, including much of Kent, Sussex and Hampshire. Those who will be able to receive the service will require a new aerial just for Channel 5.

One problem is that many VCRs and the sets with which they are used will have to be retuned. That's quite a bit of work for the trade. The government intends that the cost of this should be borne by the holder of the franchise.

TV DEVELOPMENTS

The BBC demonstrated a system called digitally-assisted television (DATV) at the recent Berlin International Television and Radio Festival. This significant development enables a high-definition TV signal to be transmitted in an existing broadcast channel. The BBC has been working on the system, which uses a separate subcarrier to carry digital instructions that enable the receiver to regenerate high-definition pictures, for about three years. Field storage is required in the receiver, but this is now becoming a fairly common feature with up-market models. The BBC's DATV technique enables a 30MHz, 1,250-line signal to be transmitted in a standard 5.5MHz, 625-line channel.

Much work on improving the present PAL system is being undertaken in West Germany. The Institute of Broadcasting Technology has developed improved PAL (I-PAL) while Dortmund University has developed quality PAL (Q-PAL). There is also PAL-Plus which uses I-PAL or Q-PAL plus digital sound and the possibility of switching to an aspect ratio of 16:9. These systems are all compatible with current PAL transmissions. Grundig is participating in field trials of these EDTV (extended definition TV) systems currently being conducted in West Germany.

LATEST BREMA FIGURES

The latest brown goods delivery figures from BREMA, for the second quarter of 1989, show that TV sales remained depressed though demand for video equipment picked up. April-June CTV deliveries at 778,000 were 8 per cent down on the same period last year. The decline was greater in large-screen sets, down 15 per cent while the fall in small-screen set deliveries was only 0.5 per cent. Interesting that CTV exports rose in value by 40 per cent while imports declined by 14 per cent, giving a trade surplus of nearly £30 million.

VCR deliveries rose by 9 per cent to 468,000 while camcorder deliveries at 58,000 increased by 35 per cent. There was a trade deficit in VCRs, UK-made machines taking 48 per cent of the market.

According to the British Phonographic Industry, sales of compact discs overtook those of conventional vinyl LPs for the first time in the second quarter. CD shipments rose 69 per cent to 8.67m in comparison with the same period in 1988 while LPs fell 7.4 per cent to 8.04m.

BSB ON TEST

BSB's Marcopolo-1 satellite at 31°W is now on test. The company gave its first public demonstration, with D-MAC encoding, at the recent Royal Television Society convention at Cambridge. A 38in. Sony receiver with a 16:9 aspect-ratio screen was used for the demonstration. BSB's channel frequencies are 11·78502GHz, 11·86174GHz, 11·93846GHz, 12·01518GHz and 12·0919GHz. BSB is currently evaluating at locations across the country a number of Squarial-type aerial designs from several companies.

SKY ACCELERATES

Sky Television's rental package (see last month's leader) attracted over 100,000 enquiries during the first two weeks. Retail sales of Astra equipment are understood to be running at a rate of well over 30,000 a month and it's estimated that around 170,000 UK homes are now equipped to receive the transmissions. At this rate the number of installations could reach around 400,000 by the end of the year.

J2T's FIVE MILLIONTH

JVC announced that the J2T joint venture formed by JVC, Thorn EMI and Telefunken in 1982 has reached the five million unit mark in VCR production. The company has two European plants, in Berlin and Tonnerre, France. J2T is now a 50-50 venture between JVC and Thomson, who bought out Telefunken and Thorn EMI's video/TV manufacturing interests.

Berlin's current production rate is around 100,000 units a month, the plant employing about 1,000 people. Tonnerre employees total 650. According to JVC the local content of J2T's products that are locally designed is over 60 per cent.

THORN EMI RENTAL REORGANISATION

Thorn EMI is reorganising the management side of its three rental chains DER, Radio Rentals and Television and Video Centres. The finance and system support departments are being transferred to a new office site in Reading – the existing offices at Swindon, Chertsey and Bracknell will be closed. Job losses will be less than 100 and no branches are to be closed. The three chains will continue to trade independently.

VIDEO SERVICING BOOK

U-View has published *Video Servicing 1987-88*. The book contains technical information covering 130 video models and is a companion to the company's *Television Servicing* book covering 389 models. It's hoped that the new book will fill an important gap in the provision of general video maintenance and repair information. It is

bound in improved hard-cover form. For a colour leaflet listing the models included and price, apply to U-View, 29 Warmsworth Road, Doncaster, Yorkshire DN4 0RP (telephone 0302 855 017).

HINARI'S NEW CHAIRMAN

Brian Palmer, who established Hinari Consumer Electronics in 1985, has resigned as chairman and chief executive. He is handing over to John Robinson who is ex-managing director of Electrocomponents. Hinari grew rapidly from a turnover of £10m in 1985-86 to £65m in 1988-89. It evolved from the wholesale distributor Trical, which Brian Palmer also started. It seems that he

prefers the challenge of the new to running an established firm.

RUMBELOWS - A CORRECTION

We must apologise for a most unfortunate error in our news item last month on the Rumbelows reorganisation. Our suggestion, due to a misinterpretation, that the servicing side will be contracted out to other companies is quite wrong. What we should have said was that servicing work carried out for other companies will be gradually reduced. Solutions has ceased to trade, the servicing side becoming an integral part of Rumbelows' customer offer, organised on a local, regional basis.

What Next?

Les Lawry-Johns

Still more letters and cards have arrived! My thanks to you all. Because of my muddled head I can't write like I could just a few years ago, but I can manage to repair a few TV sets that people phone up about. Unfortunately it seems to take me a lot longer to do these sets than it did just a short time back, but I still try.

The Philips G11

Take the Philips G11 that someone phoned up about recently. I've repaired more of these sets than any other type. He asked me to call at his house to have a look at it. I did and couldn't find a thing wrong. He said it suffered from field collapse every day or so. The only thing to do was to cart it off down to the shop to have a closer look. When it was on the bench I couldn't induce field collapse however much I tapped around, but every now and then the picture went red then failed completely. This was soon traced to a poorly fitting plug on the video panel. I thought I'd leave the set on for a while to see what happened. While waiting I popped into Dave's Coach and Horses next door, leaving a note to tell prospective customers where they could find me. Just half a bitter, because more than that makes my mind even more cloudy and I had to drive quite a way. The set was still all right when I got back, so I resoldered every joint around the TDA2600 field timebase chip, its supply, etc., after which I kept an eye on it for another hour or so. Then I carted it back to its owner and asked him to let me know if it misbehaved again.

Next day he phoned to say that it was doing something different. Every now and again the field varied and curved. So I drove off for a further inspection. As the height was varying I thought I'd have another go at finding a dry-joint. The upshot of this was no field scan at all. After checking that the supplies to the field timebase were present I fitted a new TDA2600. With the heatsink back on everying seemed to be o.k. I watched for several minutes, then checked the video plug and socket again. After that I left. I've not heard further, so I must conclude either that the set's now all right or that the owner is fed up and has bought a new one.

Back to the shop to meet a couple who are thinking of buying it and using it as a hairdressers. I showed them over the place but they didn't show any signs of eagerness to buy. I suppose I'll just have to wait until the Indian solicitors down the road have made up their minds, which they've been trying to do for several months without actually showing their hand . . .

Another Philips Set

As I was about to leave a chap came in with this 20in. Philips colour set – Model 20/CT4636/05T (KT4 chassis). It wasn't necessary to let down the main panel because I could see that the trouble was over on the right-hand side: the line output transformer had an obviously poor contact, which I carefully resoldered along with the connections to several of the other pins, just to be sure. This seems to be a common fault condition that affects many models nowadays. The transformer does lead a busy life of course. I wrapped the set up and tried it once more, for the young fellow's sake. He then departed in high spirits, having had to pay me only a fiver.

After this I locked up and returned to the bungalow to see how Gunga Din was coping – our new dog, a pal for Zeb and Tessa. As usual he started a scrap with Zeb as soon as I reached the gate – he seems to be possessive and wants to show Zeb that I'm his. Tessa has to come between them to stop any real damage being done. She does this with amazing ability and they don't argue with her – she's the boss! Incidentally Spock (the cat) still hasn't come in. She sleeps outside, coming up on the shed when she wants to be fed.

Later I had to return to the shop to show it to another chap, a second-hand furniture dealer who is looking for premises in the town or just outside it. He was impressed with the place (heaven knows why) and said he would contact me later if he could raise the cash.

Loss of Picture

While I was dealing with him someone else brought in a portable TV set with the complaint that the picture failed every time the aerial plug was touched. Memories of that other portable flooded back – the one with just the same symptoms, caused by the aerial cable disturbing the tuner unit. This time however nothing went wrong when I fitted my own aerial. He'd brought with him his short piece of aerial cable. I checked this and then fitted new plugs. This done there was no further disturbance no matter how much the aerial plug was waggled about. I charged him a couple of quid and he left quite pleased.

Back at the bungalow I wondered whether the shop would soon be a hairdressers, a second-hand furniture emporium or a solicitors' office

CCTV Faults

Peter Graves

We were called in to update a CCTV system that was new to us, having been installed by someone else. The main requirement was to add a VCR and a switcher (see Fig. 1) to select the outputs from the cameras alternately. When we started, the cameras and their associated monitors were all working. The new VCR, its monitor and the switcher were fitted and cables were run from the bank of monitors to the switcher.

All went well until the system was tested. We then found that the output from one of the cameras couldn't be selected by the switcher, which just skipped over it. We checked by connecting the camera's output to the VCR directly and making a recording. When this was played back, the VCR's monitor displayed a badly broken up, jumping picture. The picture displayed by the camera's own monitor was steady however, so we came to the conclusion that the new cables or the connectors were faulty, producing a weak signal input at the VCR. Cable continuity was checked, then the signal at the VCR was monitored with an oscilloscope. This displayed the composite video waveform with satisfactory levels.

The clue to the cause of the problem came when a test monitor was connected to the cable. Its picture flickered noticeably, an effect that had not been seen with the brand-new VCR monitor. Realisation came quickly: the camera was working on the 525-line, 60Hz field standard, a rare sight in this country. A closer look at the pulse timings in the scope waveform provided confirmation.

The range of adjustment of the hold controls in a 625-line monitor is usually sufficient to enable it to lock to the signal from a 525-line camera. When the camera's output was connected to only a single monitor it didn't matter what the standard was, but a UK 625-line VCR couldn't cope with the 525-line signal. In addition a sync separator within the switcher is used to detect the field sync pulses in the incoming video signals so that, during the field blanking period, the switcher automatically skips any unused input. The sync detector had been

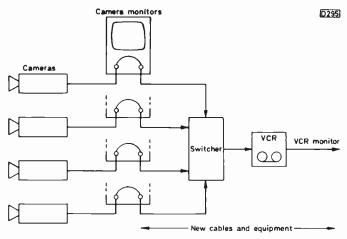


Fig. 1: Modifications that were made to update a CCTV system – addition of a switcher, VCR and VCR monitor.

upset by the different pulse timing of the 525-line signal. Normal results were obtained when a 625-line camera was installed.

Another Switcher Problem

A similar switcher and four brand-new cameras were installed at another site. Shortly after commissioning the installation the customer complained that the switcher occasionally skipped a camera. The engineer who paid the first visit to the site checked the video levels, which were all within specification, then replaced the switcher, assuming that the initial one was faulty.

The fault persisted however. During a further visit to the site we noticed that the only odd feature of the system was the use of two different makes of camera. Installations usually use just one make. We found that the cause of the fault was the different d.c. levels of the video signals from the two types of camera. The switcher's inputs are d.c. coupled, and the different levels upset the sync detection circuits which would occasionally decide that no camera was connected to a particular input. The switcher then skipped to the next one. Fitting coupling capacitors to all the inputs to remove the d.c. components of the signals solved the problem.

Connector Fault

Another fault that required several visits to produce a cure developed at the same site. Every three months or so one of the cameras, over the door of a warehouse, would apparently stop working. An engineer would call, find no video signal at the switcher input, go out to the camera and connect his test monitor, only to find that the camera was working perfectly. Reconnecting the cable to the switcher restored the picture on the main monitor and no reason could be found for the loss of picture, despite much camera tapping and connector waggling.

The cable's BNC connector was a crimp-on type and we finally found that the original installer had failed to push the inner pin fully home into the insulator. It had gone in sufficiently to make contact but, as the weather got colder, it must have contracted slightly, pulling it out just far enough for contact to be broken and the picture lost. The disturbance when a test monitor was connected restored contact again for a while. A replacement connector cured the fault.

Night Picture Fault

The complaint with an outside camera in a weather-proof housing was that while the daytime picture was fine a white disc appeared on the picture at night. A visit after dark confirmed the presence of a round white circle on the picture. There was nothing in the field of view that could have been responsible – no odd lights or reflective objects. Inspection of the housing revealed the cause of the fault. The camera has a power-on LED indicator on its front panel, by the side of the lens. During a recent service the camera had been removed from its housing and when replaced it must have been farther away from the window than originally. An image of the LED was being reflected back into the lens from the inside of the window. A short piece of insulating tape over the LED cured the problem.

MANOR SUPPLIES

FOR DOMESTIC TV & VCR.

TFST DEMONSTRATIONS AT 172 **WEST END LANE**







- 40 different patterns and variations.
- ★ Fully interlaced sync pulses with correct picture blanking
- EBU colour bars, BBC colour bars, whole rasters & split bars (specially useful for VCR service), white, yellow, cyan, green, magenta, red, blue and black.
- Chequerboard.
- ★ Mono outputs with border castellations, cross hatch, grey scale, vertical lines, horizontal lines and dots.

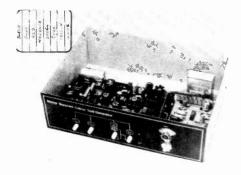
 UHF modulator output plugs straight into receiver aerial socket.
- Additional video output for CCTV & VCR.
- Facilities for sound output.
- Easy to build kit, standard parts. Only 2 adjustments. No special test equipment required.
- Mains operated with stabilised power supply.
- All kits fully guaranteed with back-up service.
- Also available with VHF Modulator.

| Price of Kit | £70.00 |
|--|---------|
| Case $(10'' \times 6'' \times 2^{1/4}'')$ app. | £8.60 |
| Optional Sound Module (6MHz or 5.5MHz) | £3,90 |
| Built & Tested in Case including Sound Module | £108.00 |
| | |



Post/Packing £3.00 Add VAT 15% TO ALL PRICES

PAL COLOUR BAR GENERATOR (Mk4)



- ★ Output at UHF, applied to receiver aerial socket. ★ In addition to colour bars R-Y, B-Y etc.
- Cross-hatch, grey scale, peak white and black level.
- Push button controls, battery or mains operated.
- Simple design, only five i.c.s on colour bar P.C.B.
- ★ Backup service available.

PRICE OF MK 4 COLOUR BAR GENERATOR KIT £30.00. CASE £8.60. BATT HOLDERS £4.20. MAINS SUPPLY KIT £4.20

(Combined P&P £3.00).

ADD VAT

VHF MODULATOR (CH 1 to 4) FOR OVERSEAS £5.75. EASILY ADAPTED FOR VIDEO OUTPUT & C.C.T.V.

KITS & PROJECTS

SAW IF AND TUNER UNIT complete and tested for video & audio outputs £28.50 p.p. £1.80.
PAL DECODER KIT (Video to RGB) for Monitors £27.00 p.p. £1.00.

PAL DECODER KIT (Video to RGB) for Monitors £27.00 p.p. £1.00.

PAL ENCODER KIT (RGB to Video) £18.50 p.p. £1.30.

CROSS HATCH UNIT KIT, Aerial Input type, incl. T.V. sync and UHF Modulator, Battery Operated, also gives Peak White & Black Levels, can be used for any set. £13.50 p.p. 80p. (Alum. Case £3.20 p.p. £1.40.)

ADDITIONAL GREY SCALE Kit £2.90 p.p. 45p.

UHF SIGNAL STRENGTH METER KIT £30.00 Alum. Case £3.20. De

Luxe Case £8.60 (Built & Tested £48.00) p.p. £2.50. CRT TESTER & REACTIVATOR KIT For Colour & Mono complete with

Case, Panel Meter Indicator - can be adapted for latest CRTs £35.00 p.p.

TV SERVICE SPARES

PHILIPS SPARES

G8 VARICAP CONTROL \$2.50 p.p. £1.00. G8 PANELS (Tested) Power £12.50, Scan £15.00, Signals £15.00 p.p. £2.50. KT3, K30 PANELS, tested, excharge, sound, power, bridge rect, frame, RGB £7.50 each. Decoder (Non-text) £10.00 p.p. £1.50.

\$7.50 each. Decoder (Non-text) \$10.00 p.p. \$1.50. GII TDA2600 IC HOLDER 70p p.p. 30p. GII TDA2600 IC HOLDER 70p p.p. 30p. GII PANELS (tested), frame, IF, decoder £12.50 each. p.p. £2.00. Scan £15.00 p.p. £2.80. Power tested exchange £18.00 p.p. £2.80. GII PANELS EX-RENTAL (untested) Scan. Frame, Decoder £2.50 p.p. £2.00. GII IF PANEL (new) less Tuner £2.50 p.p. £1.30. GII 8POS Touch Tune Channel Selector (replaces old type) incl. instructions

G11 8POS TOUCH TUBE CHARMES SCREETIN (TEPRACES ON GYPE) HAS HARMESTERS (125.00 p.p. £1.80)
G9 POWER SUPPLY UNIT £5.00 p.p. £2.30.
MANUALS p.p. 80p. K35, 2A, 2B, CP90 £3.50. KT3 £4.50, CTX-E, CTX-S. CF1 £1.50. KT4, K40, 3A £4.50 p.p. £2.50.

THORN/FERGUSON SPARES

8000, 8500, 8800, 9800 PANELS tested, exchange. £8.80, Frame,

Decoder £10.00 p.p. £2.30. 9000 Series IF/Decoder tested £10.00, Line/Power £20.00, Frame £18.00 p.p. £2.80. 9000 Series IF/Decoder tested £10.00, Line/Power £20.00, Frame £18.00 p. 9500/9600 Line Sean £25.00, Power £20.00 p.p. £2.80.
TX9 REI Choke L64 £3.50 p.p. 80p.
TX9/TX10 Facia, control panel incl. infra-red receiver £5.00 p.p. £2.00
TX9/TX10 Saw filter IF p.anel £5.00 p.p. 80p.
TX9/TX10 Saw filter IF p.anel £5.00 p.p. 80p.
TX9/Utrasonic remote control panel £7.50 p.p. £2.50.
TX9/I0 Remote & tuning 1508A (incl. SAA5012) £2.50 p.p. £1.80.
TX9/I0 Remote & tuning 1536 (incl. SAA5012, £2.50 p.p. £1.80.
TX9/I0 Remote & tuning 1536 (incl. SAA5012, £4.71) £3.50 p.p. £1.80.
TX90 Stereo Audio Board £3.50 p.p. £1.80.
TX90 30" Chassis. Brand new £25.00 p.p. £2.80.
TX90 Mains TX £18.60 p.p. £2.81.
TX90/TX100 Chassis complete & boxed (untested) £20.00 p.p. £2.80.

TX90/TX100 Chassis complete & boxed (untested) £20.00 p.p. £2.80.

IC SELECTION

| LA7800 | 61.80 | SL1430 | £1.80 | LDA1170 | £2.20 | 1DA2594 | £3.80 | TDA3571 | €4.80 |
|------------|--------|-----------|--------|----------|-------|----------|-------|-----------|-------|
| LA7801 | £3.50 | SL1432 | £1.20 | TDA1180 | £2.20 | LDA2595 | £4.80 | 1DA3576 | £5.80 |
| M293B1 | £5.80 | SN762260N | £1,80 | FDA1190Z | £2.20 | LDA2600 | £7.50 | LDA3650 | £5,80 |
| MC13002P | £5.80 | SN76705 | £9.80 | TDA1470 | £2.80 | IDA26HA | £1.90 | TDA3651 | £2,90 |
| ML237 | £3,80 | STK5325 | £6.80 | TDA1670A | £3.20 | TDA2640 | £3.20 | LDA3652 | £3.20 |
| ML238 | £6.80 | STK5471 | £6.50 | LDA1701 | £3.80 | TDA2653A | £3.20 | TDA3653A | £5.90 |
| ML923 | £4.80 | STK5481 | £8.80 | 1DA1770 | £3.20 | FDA2654 | £5.70 | TDA3653B | £3.20 |
| SAA 1024 | £5.80 | STK7308 | £8.80 | TDA1870 | £6.80 | TDA2655 | £6.80 | FDA3654 | £3.20 |
| SAA1025 | £5.80 | STK7348 | £10.80 | TDA1906 | £2.80 | TDA2670 | £3.20 | TDA4420 | £2.20 |
| SAA1124 | £3,50 | STR441 | £7.80 | FDA 1940 | €3.20 | FDA2680 | £3.80 | TDA4421 | £3.21 |
| SAA1251 | £6.80 | STR450 | £6.80 | TDA 1950 | £3.50 | LDA2690 | £3.80 | TDA4442 | £6.80 |
| SAA 3027 | €5.80 | STR451 | €5.80 | LDA2150 | €3.20 | LDA2780 | £3.50 | LDA4500 | £5,80 |
| SAA5000 | £2.80 | STR4211 | £6.80 | TD 42270 | £2.80 | TDA3190 | £4.20 | TDA4501 | £6.80 |
| SAA5010 | £5.80 | STR50103 | 68.83 | LDA2510 | £6.80 | IDA3300 | £6.80 | TDA4503 | £5.80 |
| SAA5012 | £5.80 | STR6020 | €5.80 | LDA2522 | £3.80 | LDA3301 | £6.80 | TDA4600 | £2.80 |
| SAA5620 | £5.80 | TBA120 | £1.20 | LDA2548 | £5.80 | FDA3330 | £3.50 | TDA4601 | £2.80 |
| SAA5030 | £5.80 | TBA750 | £2.20 | TDA2571 | £3.80 | LDA3500 | £6.80 | TDA4610 | £3.80 |
| SAA5050 | £6.80 | TBA920 | €2.20 | TDA2576A | £3,80 | LDA3510 | £9.80 | IDA8180 | £6.80 |
| SAB3035 | £7.50 | TBA950 | £2.20- | TDA2577 | £4.80 | IDA3540 | £2.50 | IDA8190 | £3.80 |
| SAB3037 | £15.80 | FCA270 | £1.80 | IDA2577A | £4.80 | LDA 3541 | £3.50 | LDA9403 | £3.80 |
| SAF1032 | €4.50 | TCA800 | €5.30 | FDA2578 | £3.80 | LDA3560 | £4,80 | TDA9503 | £3.80 |
| SAI-1039 | £2.20 | TDA1035T | £2.40 | TDA2579 | 61.80 | TDA3561A | £5,80 | TDA9513 | £4.80 |
| SL470.471 | £2.80 | TDA1037 | £1.90 | IDA258I | €2.20 | TDA3562A | £5,80 | TEA1009 | £2.20 |
| SL486: | £3.20 | TDA1044 | £2.90 | LDA2582 | £2.80 | LDA 3565 | €3.80 | FI-A 1014 | £3.50 |
| SL490 | £2.80 | TDA1082 | 61.80 | LDA2593 | £2.80 | TDA3566 | £5.80 | TFA2018A | £2.20 |
| IC p.p. 50 | D | | | | | | | | |

VARICAP TUNERS: Grundig 8630 series £5.00 p.p. £1.00. U321, U322/ U341/NSF204, ELC1043 (equiv), SC4, VIII- NSF203 £7.80 p.p. £1.80. UHF/VHF UV411 £10.80, U343 £10.80 p.p. £1.00.

LINE OUTPUT TRANSFORMERS

| BITTE CETTER I | WINI TON CONTINUEDING |
|--|--|
| SONY KV1882 £34.50 | R.B.M. 120. T22 Bobbin £5.60 |
| SONY KV2092/2096£34.50 | DECCA Bradford (state Mod No) £8.80 |
| FERG., HMV, MARCONI, ULTRA | DECCA 100, 80£8.80 |
| 1590, 1591, 1612, 1613, 1712 €4.80 | FIDELITY ZX2000, 3000 (Not 22") £15.50 |
| FERGUSON 3787 (Normende) £9.80 | GEC 2110 series £10.60 |
| THORN 1600, 1615, 1690, 1691, 1790 £9.00 | ITT CVC 5 to 9, CVC20 £9.80 |
| THORN 3000/3500 SCAN, EHT £6.90 | ITT CVC25, CVC30 series |
| THORN 8000 £12.80 | ITT CVC45 £9.80 |
| THORN 9000 to 9600 | ITT CVC1200/1201 £12.50 |
| THORNTX9 £12.50 | PYE 725 (90°) 731 to 741 £9.20 |
| THORN TX10 £16.50 | PHILIPS G8 |
| THORN IX100110° £19.80 | PHILIPS G9 £12.80 |
| SPECIAL OFFER | PHILIPS K73 |
| ITT VC300£4.80 | PHILIPS K30, K35 £22.50 |
| PHILIPS 320 £2.80 | PHILIPS CTX-E.S £22.50 |
| PHILIPS G11 £5.00 | PHILIPS KT4/K40 £22,90 |
| GFC 2028, 2040, 2100 £1.00 | PHILIPS 2A |
| PYE 691-7 chassis type only £5.00 | PHILIPS CF1 £32.80 |
| R.B.M. T20, T22 £9.80 | |
| LOPT's p.p. £1.50 | |

TRIPLERS: THORN 9000 £8.80 p.p. £1.50.

VHF to UHF Converters £26.50 p.p. £2.50.

UNIVERSAL (best quality) £7.80 p.p. £1.50. CONTINENTAL TVK & EG RANGE (quote exact no.) replacements £13.80

DECCA/TATUNG £7.80 p.p. £1.50. 6-3V CRT Boost Transformers for Colour & Mono £5.90 p.p. £1.40. 455 CRYSTALS for Remote Control Handsets, 4 for £1.00 p.p. 50p.

CALLERS WELCOME AT SHOP PREMISES

THOUSANDS OF ADDITIONAL ITEMS, ENQUIRIES INVITED LARGE SELECTION TESTED COLOUR PANELS POPULAR MODELS

Telephone 01-794 8751, 794 7346



PLEASE ADD VAT 15% TO ALL PRICES INCL P+P

SPECIAL OFFER THIS MONTH

| UNIVERSAL TRIPLER. NEW TYPE | *************************************** | 80 ₁₀ | re heads | 215 00 to 240 |
|--|---|---|--|--|
| AMSTRAD Line O.P. Transistors with Diode BU208A | 85p or 20/ | £1.00) | THORN PANEI | £15.00 to £40 |
| VIDEO LAMPS, Long Lead | *************************************** | Thorn Punel with SAAS | | |
| HITACHI & GEC FRAME, Thick Film | 2215AE£20 FCC2015BE£10 FCC22151 | BE£10 | 7X9 - TX90 NEW | Ð |
| K30 FRONT PANEL TEL-TEX TYPE NEW G11 LINE OP PANEL | | £5.00 | TX9 - TX10 - TX10 |) |
| PHILIPS YEARS AHEAD | | | THORN MAIN CH | ASSIS |
| THE CREDIT CARD CALCULATOR Solar Power NEW PHILIPS SBC 1833 Solar & Battery Powere | eredd Calculator | £3.75 TX9, TX90, TX100, TX | | anode Cap and Lead £1 |
| THORN PANEL TX9 REC & REMOTE PANEL | S with Mains Trans | £5.00 | TEXT DECODER TX10 | £8.00 |
| TX10 REC & REMOTE PANEL TX100 FRONT PANEL | LS with Mains Trans | £5.00 TEXT DECODER VM6 | | |
| TX10 TUBE BASE ON PANEL | *************************************** | £3.00 PANELS VM6103/2 TR | (| 012 32 |
| THORN PANEL No. 515-353, 548.02, 564.01, 509/ | /102, 515/173, 508/161 | £5.00 | AUTO RANGI | |
| THORN TX STEREO SOUND O.P. PANEL (I.C. THORN VIDEO AERIAL AMP 01 M4-597-001 | .TA7227P) | £1.00 DC and AC and Resista | nce Pucket 3000 Philips | £12 |
| KT3-K30-K4-K40 CTX ETC Mains Switch | | | | T |
| G8 LOPTS PHILIPS | 75p each £6.00 | | £10,00 Post £5,00 | TV AERIAL/VIDEO |
| GII LOPTS | £3.90 | LINE TRANSFORMER Philips TX 13 | | Combiner Switch and Sockets Lead 50p |
| PHILIPS DESK TYPE Dual Power Calculator SBC1704 | | WANDER PHONES Key Pad and Ha | | · |
| K40 FOCUS POT 4.7μ KT3 W/W | £1.00 | PHILIPS UNIVERSAL BATTERY TO SCIENTIFIC CALCULATOR SBC17 | | THORN RECEIVER |
| FOCUS POT HDK TPA6006 | £2.00 | THORN 8500 LOPT | £2.00 | 564/314 |
| KT3 Triplers | 00.33 | NEW GEC 2110 LOPT | £2.00 | 564/323 M293B1 |
| K3 Tex Front Panels with LC s (SAA3027P/SAB3013/H G8 100K Pots on Panel & Lead for 6 Push Button Unit K30 Mains Switch remote | O448328) £5.00 £2.00 | DX-TUNER VHF-UHF SEND FOR | DATA 50n | SAA5012 2.0 |
| K35 Mains Switch remote | £1.00 75p £1.50 | TUNER | 75p | HCF4556BE MC14493P |
| K35 Aerial Socket and Plug in Lead to Tuner KT3-K30 Slider Pots 4.7ku | 20p each | GEC 20AX POWER SUPPLY Mark : THORN 9000 4.7m 400V | | |
| LARGE Foacs Pots. Fits Pye, GEC, ITT, Decca 8 PUSH BUTTON UNIT for CTX Chassis £1.50 | 75p | G8 TUNER V/CAP on Panel | 40p £3.50 | THORN DECENTS |
| G8 Power Supply Panel £4.00 | | G8 SPEAKER | 75p | THORN RECEIVER 564/314 |
| EX DECCA 80-100 Decoder £5,00 EX DECCA 80-100 Frame £5,00 THORN 8000-8500-8800 Decoder £6,00 | | 9,000 SPEAKER | 00.13 | 544/301 |
| GLASS BEADS Diodes 200v/1.2A | 50 for £1.00 | THORN 9000 Sound OP Panel | £30p | 544/321 544/341 |
| G11 Tip Switch £20,00 | 2- 70 #1300 | ONE I.C K35 Decoder | £7.00 | SAA 1060 |
| GII Decoder Panel £8.00 | | K30 IF/K35 IF THORN Lopt 8500-8800 | £2.00 £4.00 | MAB8440P SAB3035 |
| JVC HEADS 3155 £20 G11 Condenser 470/250V ITT £2.00 G9 Power Panel £3.50 | | TX9 THORN Tuner Panel with ICS P | | €6.00 |
| G8 Transductor £1.25 G8 Push Button Unit £2.00 | | THORN 1600 Rec- & Anode Cap | 50p | |
| G8 Con/Panel New Back Type £4.00 | | KT3-K30 Slider Pots 4.7k | £1.00 for 10 | BRIDGES RECTIFIER |
| KT4-KT3-K30 Handset Replacement HT520 METER 20,000 Fuse Diode Protector Logic Test | Facility £15.90 | K35 20 Turn Pots | 6p each | BR-31 50V 2Amp 8 for £1.00 |
| 9000 SERIES Decoder (II 929 014 080 Thorn | £12.00 £5.00 | HITACHI & GEC 20k Pots and 100K 100K POT & 20K v/cap type with ban | | |
| LATEST VIDEO | | KT3 K30 Speaker | d switch 5p 30p | TX90 MOD 37141B |
| For Latest Philips, GEC, Pye and Hitachi. Front panel w LED's. | vith memory chip and push button and pots and £6.00 NEW | K30 Push Button Switch 6 Way | 90.13 | The Sweep Tuning System |
| 20AX GEC LOPT Panel with Split Diode RANK T20 Fouces Pot RANK 718 Foucs Pot 16" LOPT Split Diode 2433481 | £4.00 75p | K35 Sound O/P Panel Plug in and KT | 3 sound o/p £3.00 | TX9 139/001 £5.00 |
| RANK 718 Foucs Pot 16" LOPT Split Diode 2433481 | 75p £1.90 £6.00 | K35 12 way Push Button Unit | £1.50 | |
| Ex Panel Split Diodes 2432871/2432981 Split Diode 2433752 | £5 64 | RANK T20 Front Panel | 26.00 | T6070V TX9 Transistor £1.00 TX9 90D4-106-004 £1.00 |
| T703A LOPT Transformer Rank with Focus Pots and D. HITACHI Mains Switch | iode £2.00 | G8 6 Button Unit, New Type | £6,00 £2.00 | TX9 90D4-099-001 £1.00 |
| HITACHI AE Socket | 30p | 6 off LED DISPLAYS, Mixed | 00,13 | Chopper Transformer £1.00 TX9 (6D4-025-001 choke £1.00 |
| -1 CONDENSER Axail Leads 450 A/C 1200 D/C | 15p | HAND SET TESTER, Infra Red | £3.00 | TX9 90D4-093-001-01G £1.00 |
| MAINS TRANSFORMER 240v in/20v/8v GREEN FLAT, NEC. LED's | \$1.00 | AERIAL SPLITTER with filter | £1.00 | |
| 15V015V 1 Amp Print Type £1 | 3p each 100 for £2 | UNI DIRECTIONAL Dynamic Micro 20 TURN POTS with Band Switch | phone £2.00 10p | 20MM IAmp A5 Fuse |
| 12+12V 2.8VA Print 1"×1" 75p 8+8V 1 Amp Print 75p | | PUSH BUTTON Mains Switch with So | | £3.00 per 100 |
| ET596 UHF V/CAP Tuner small 62 50 | | PYE 731 Line Trans | £3.50 | TX90 TX925 TX100 |
| FIDELITY Panels with L.C. £1.00 FIDELITY LOPT Split Diode AT2076/80 £3.00 AT 2076/80 £5.00 | | PYE 731 New Power Supply | £4.00 | Mains Switch with Stand-hy |
| ITT CVC20 to 45 PANELS Send for list | | 800v DIODES at 3 amps. Glass Beads | | and Lead |
| MULLARD TEL-TEX DECODER Type VM6103 | €7.00 | THORN 8500 Time Base | £5,00 £3.00 | 3 for £1 or 50p each |
| WE HAVE OVER 1,000 6 DIODE TRIPLER AT £1 EAC THORN main T/V chassis complete TX9-TX10-TX90-TX | | 7 SEG DISPLAYS 4 Bank Displays Z | | |
| TX10 8 way button unit £8.00 | (925-TX100) £15,00 | SPLIT DIODE FBS1245AR | £5.00 | UNIVERSAL VIDEO — RECORD |
| TX900 with PRR-SR7 £6,00 PHILIPS VHS Tape 180 £2,25 | | GEC TEXT PANEL PC895A7 | 013 | Mono 11 Piece Kit £8,00 |
| 2431851 2433952 | CTK Lopt | SEND FOR LIST OF VIDEO SPARE | | Stereo 14 Piece Kit £8.00 |
| 2432211 2432984 2432301 K4 L.O.P.T. | 36212 33651 | TRANSFORMERS | AT2036/00 AT2076/55 AT2048/11 AT2076/71T AT2055 AT2080/15 | SHARP MSHIFCF09 |
| 2432491 K40 SPLIT-I | DIODE 36072 L.O.P.T. | 3112-338-30942 £1.00 | AT2076/35 RCO ST CT33 | TX9 LOPT 25 C10 |
| 2432981 TX9 L.O.P.T 2432984 2432101-2 £10 E | | | AT2076/38 OT2041 AT2076/51 FB165KA Orio | |
| 2432204 243210-2 2433212 TX 100 Green Spot 2433481 Split Diode 1100 £15.00 | 16761 | 3112-138-98094 £1.00 | CVC 820 2076/51 CVC 800 2432461 243345 | 1 EACH 0004-235 002-01 |
| 2433581 Split Dioge 1100 £15,00 | 36832 | 3112-338-30634 £2.00 3122-138-96044 £1.00 | REGULATED POWER SUPPLY | VIDEO MOTOR for VT568 type VC62DD8 £8.00 |
| | P.T. 36833 36921779 £10 EACH | 3122-138-53861 £1.00 | REGULATED POWER SUPPLY, Size 6"×5"×2"/2" (F3v = 0-4 5v = 0-6v lamp Pre-set 3v-to-12 volts, 1 | AMP TUNER IF for VT568 Hitachi |
| 2433751 2433452 TX100 THORN | | | amp £5.00 Post (2.00) | & GEC 69.00 |
| 2433751 2433452 TX100 THORN 1TT Tuner IF CMRRXXX3 £20 ITT TUNER CAN LC Holders | | | END TOTAL LIGHT OF VIUEU SPAR | MOUNT POST OR IN CASE CON |
| 2433751 2433452 TX100 THORN ITT Tuner IF CMRX0/3 ITT TUNER CAN CMR 8X0/3 £20.00 I.C. Holders | SEND FOR LIST BRITISH MADE V.H.S. | 00. 30 VOLT TO 15 VOLTS FARME | LL POWER SUPPLY 19" RACK I | |
| 2433751 2433452 TX100 THORN ITT TUNET IF CMRRNU3 220 ITT TUNER CAN CMR RNU3 220.00 Decca [10] Lapt Panel and Ferne 15 00 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WIT | TH MAINS PLUG £4 | |
| 2433751 TX 100 THORN 1TT TUNER CAN CMR 8003 220.00 Decca 100 Lopt Panel and Frame £5.00 DIL - DI | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WI T. NEW. NO ON/OFF SWITCH, NO | TH MAINS PLUG £4 HANDLE WITH CORD, BLACK I | N COLOUR £5 |
| 2433751 2433452 TX100 THORN 1TT Tuner IF CMR8003 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF – NEW ROHDE & SCHWAR | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A | TH MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES | N COLOUR £5 |
| 2433751 2433452 TXH00 THORN TITT TUNER CAN CMR 880/3 £20,00 Decca 100 Lopt Panel and Frame £5,00 PIN DATA with co-ax sxket UHF v/cap er 480B gain £1.50 or 10 for £10 Can be adapted for video LOO F | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF – NEW ROHDE & SCHWAR | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WI T. NEW. NO ON/OFF SWITCH, NO | TH MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES | N COLOUR £5 |
| 243375 243345 ZTHIO THORN 220 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF – NEW ROHDE & SCHWAR. 1 OFF – | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M | TH MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES ONITORING RECEIVER £1,200 | N COLOUR £5 T TRANSMITTER £8,000 |
| 2433751 2433751 2433752 TAHO THORN ITT TUNER CAN CMR NN/3 520,00 Decca 100 Lopt Panel and Frame 55,00 PIN DATA with co-ax socket UHF v/cap r £100 Can be adapted for video TTT PANEL C 201 CMC 113 CMC 302 C 115 CMC 303 CMC 964 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF – NEW ROHDE & SCHWAR | 00. 30 VOLT TO 15 VOLTS FARNE 12V/1 AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M | TH MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES ONITORING RECEIVER £1,200 | N COLOUR £5 T TRANSMITTER £8,000 |
| 2433751 243375 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR. 1 OFF - | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT | TH MAINS PLUG E4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES ONITORING RECEIVER £1,200 TON, SHOEBURYNE | N COLOUR £5 T TRANSMITTER £8,000 |
| 2433751 2433751 2433752 TATRO THORN ITT TUNER CAN CMR 800/3 £20.00 Deca 100 Lopt Panel and Frame £5.00 PIN DATA I with co-ax sacket UHF veap or 4kBH gain £1.50 or 10 for Can be adapted for video TTT PANEL (2.301 CMC 113 CMC 304 £5.00 CMR 8000 LOO F DIL - DIL 70p 18 Pin × 5 70p 18 Pin × 10 70p 70p 70p 70p 70p 70p 70p 70p 70p 70 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR: 1 OFF - SENDZ COMPONENTS | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT SAME DAY SE | TH MAINS PLUG E4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES ONITORING RECEIVER £1,200 TON, SHOEBURYNE RVICE | N COLOUR 25 I TRANSMITTER 28,000 SS, ESSEX SS3 8AF |
| 243375 243375 2433452 TX100 THORN TTT TUNER CAN CMR 8N0/3 £20.00 Decca 100 Lopt Panel and Frame £5.00 DIL DIL. DIL | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR: 1 OFF - SENDZ COMPONENTS All items subject to ava | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT SAME DAY SE Hability. No Accounts: No Crec | TH MAINS PLUG E4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES' ONITORING RECEIVER £1,200 TON, SHOEBURYNE RVICE Ht Cards. Postal Order/Check | N COLOUR 25 I TRANSMITTER 28,000 SS, ESSEX SS3 8AF |
| 243375 243375 243375 243345 TX 100 THORN TTT TUNER CAN CMR 8N0/3 220.00 Deca 100 Lopt Panel and Frame £5.00 DIL - DIL | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR: 1 OFF - SENDZ COMPONENTS All items subject to ava | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT SAME DAY SE Hability. No Accounts: No Crec 5% VAT, then £1 Postage. Adv | TH MAINS PLUG E4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES ONITORING RECEIVER £1,200 TON, SHOEBURYNE RVICE Ht Cards. Postal Order/Chec d Postage for Overseas. | N COLOUR 25 I TRANSMITTER 28,000 SS, ESSEX SS3 8AF |
| 243375 243375 2433452 TX100 THORN 1TT TUNER CAN CMR 880/3 £20.00 1.C. Holders 1. | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR. 1 OFF - SENDZ COMPONENTS All items subject to ava | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT SAME DAY SE Blability. No Accounts: No Crec 5% VAT, then £1 Postage. Ad Callers: To sh | H MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES' ONITORING RECEIVER £1,200 TON, SHOEBURYNE RVICE Ht Cards. Postal Order/Check d Postage for Overseas. Op at | N COLOUR SS T TRANSMITTER 28,000 SS, ESSEX SS3 8AF |
| 2433751 243375 | SEND FOR LIST BRITISH MADE V.H.S. SEND FOR DATA 20 AMP COST OVER £4 PHILIPS HALOGEN LIGH 1 OFF - NEW ROHDE & SCHWAR. 1 OFF - SENDZ COMPONENTS All items subject to ava | 00. 30 VOLT TO 15 VOLTS FARNE 12V/I AMP POWER SUPPLY WIT T. NEW. NO ON/OFF SWITCH, NO Z SBUF.E1 VISION MODULATOR A ROHDE & SCHWARZ EKFZ T.V. M S, 63 BISHOPSTEIGNT SAME DAY SE Hability. No Accounts: No Crec 5% VAT, then £1 Postage. Ad Callers: To sh AD, SOUTHEND. Tel. (| H MAINS PLUG £4 HANDLE WITH CORD. BLACK I T.V./RF 25-1000MHz T.V. TES' ONITORING RECEIVER £1,200 TON, SHOEBURYNE RVICE Ht Cards. Postal Order/Chec d Postage for Overseas. Op at 0702-332992. Fax. 0 | N COLOUR SS I TRANSMITTER \$8,000 SS, ESSEX SS3 8AF Jue with order. |

Servicing the Panasonic NV730

Nick Beer

The Panasonic VCRs that followed the NV333/366 and preceded the NV-G21 series all had very similar mechanisms, no matter how they looked externally and however many features they had. The D1 deck was used in the majority of the machines of this era. Even those machines that didn't use the D1 deck had a very similar mechanism, with the result that manuals refer you to the one for the D1 deck for alignment details. A later article will cover the D1 deck and the electronic faults in the machines that use it. Other models we propose to cover will be the NV688, NV777 and NV788. This article however is devoted to the NV730, not because it's very different but because it has a very distinctive fault pattern that would be difficult to outline in a more general article covering several machines.

The NV730B was Panasonic's second dual-speed VCR. It superseded and was a considerable improvement upon the NV688. It's a front loader with an eight-event, two-week timer and an infra-red remote control system that was comprehensive for its time though without timer setting facilities. For mechanism control there's a membrane-type soft-touch pad on a fold-down flap the full width of the machine. Despite the relatively high price, £529 initially rising to £549 later, large numbers of these machines were sold. One problem is the poor video head life – more on this later.

Dismantling

The top is held down with four screws, two at each side, and simply lifts off. The bottom is held on by seven gold screws. To remove the screening can, loosen the five red screws and slip it up and off. The front comes off in two parts. The main part can be unclipped after removing three red screws across the top. This allows you to remove the four red carriage retaining screws. After disconnecting the plug at its rear right the carriage can be lifted out. Removing the carriage makes life a lot easier – when changing the idler for example. See later for further front dismantling.

Mechanical Operation

The mechanism has only two belts. One is the front loading belt (part no. VDV0151) which Panasonic refer to as a "slot-in" belt. It's a wide, flat belt at the top righthand side of the carriage. When it fails the result is sluggish front loading. You get one with the maintenance kit (part no. VUD4091KIT) for this model. The other is the loading belt (VDV0152) which is at the rear, right-hand corner at the bottom of the mechanism. It drives the tape loading mechanism, in turn being driven by the loading motor (VEM0211) via the loading pulley (VDG0177). The latter is also part of the maintenance kit – it becomes noisy on its pinion and the teeth on its lower drive surface tend to wear. The loading method is the same as with the earlier NV333/366/370 etc., via a series of gears that drive the guide arms, main lever and cam. Mode selection is effected by the mode switch which is actuated by the main lever. In this machine the

mode switch (VES0251) is unique and extremely reliable – unlike its counterparts VSS0110 and VSS0135 in D1 mechanism machines.

The capstan motor is a fixed-stator, direct-drive type that's used only for the capstan. D1 machines differ in this respect as they tend to use a belt driven by the capstan flywheel to drive the reels. In the NV730 there's a separate motor (VEM0212) for reel drive, via the reel idler (VXP0581 – not UXP0581 as in the manual). This is also part of the maintenance kit. Kick is via the main lever. The reel motor tends to become noisy both mechanically and electrically – the latter defect causes noise on the picture display.

There's a direct-drive unit (VEG0341) for the drum. This is virtually a hundred per cent reliable. The original head is type VEH0256 but the replacement supplied is type VEH0267. The two are identical as far as appearance and fitting are concerned. The discharge angle is at the bottom of the drum unit. It doesn't give a tenth of the trouble that you get with the VXA1584 fitted at the top on NV333/366s. When it does fail the symptom is a squeal.

The VEH0259 audio/control head is much better wearing than some I could mention. The only one I had to change developed a sticky surface which led to tape path/transport trouble like tape riding etc. As with all Panasonic audio/control head assemblies, the leads plug in and adjustment/fixing is by means of three screws at the base. Replacement is thus quick and straighforward.

Mechanical Service

We'll run through the replacement procedures for general service items, including those in the maintenance kit.

It's best to remove the cassette carriage before you replace the reel idler – access is very tricky with the carriage in place. Remove the reel motor from above (three gold screws) and the take-up reel. This will allow you to move the idler over to the right-hand side and out through the cut-out. Make sure that you re-engage the spring underneath the idler plate.

To remove the video head, unsolder the eight arrowed connections on its PCB and take out the two securing bolts. Ensure that all solder is removed from the pins and that they are free to move before you remove the bolts. This way no damage will occur due to removing the drum without unsoldering the pins, as is so easily done. Replace in the opposite order. There are threaded holes for use with the Panasonic head puller, but use of a hairdryer will usually enable a tight drum to be removed.

One end of the brake band is held by the adjustment screw. The other is held to the back of the tension post arm by its own sprung plastic retainer. It can thus be pulled off without having to remove the post, as in earlier machines. When you replace it, check the back tension and the post's landing position.

The front loading belt can be slid over its two pulleys on the right-hand side of the cassette carriage after unclipping the worm retainer and lifting the top end of the worm upwards. There's no need to remove the worm completely, or indeed the carriage, to replace just this belt. The loading belt is the simplest job – just slip it over the loading motor pulley and the loading gear pulley after removing the bottom plate. To replace the loading pulley simply undo the two retaining circlips.

The pinch roller (VXL1209) is held by a single circlip, but watch the washers as you remove it. This is another job that calls for removal of the carriage first.

The impedance roller (VDP0908) is held on its shaft with the standard nut. It's essential that the replacement roller is at exactly the right height, otherwise there will be severe disturbance to the picture. Do this by making a note of its rough position before removing the old one. Then fine set it by playing a standard tracking tape – don't use your best one as it may get marked as you adjust the height of the roller. If possible it's best to replace and readjust the impedance roller as a separate job. If you are doing a general service, do everything except for the roller, check that everything is o.k., then replace the roller. It will save you a lot of heartache!

Mechanical Adjustments

The various mechanical adjustment figures are as follows:

Back tension should be 25-30g measured with a tentelometer.

The rewind and fast-forward torque should be over 400g/cm.

The take-up torque should be 130-180g/cm.

If the torques are low, attention should be turned to the reel drive mechanics. To reset the back tension, adjust the slotted hole of the brake band on the supply reel. Also ensure that with the back tension set correctly you have a perfect still frame. See the faults list.

Faults List

The following summarises our fault experiences with this machine.

- (1) Tapes not ejected far enough, not ejected at all, or won't accept a cassette. Check whether the cassette carrier in the carriage flops about. If so, suspect that the sprung cam (VXP0575) at the front right-hand side of the carriage has broken. The spring mounting pips break, as a result of which the spring becomes loose and there's no tension. If this is the case the front loading motor will continue to run as the cassette out switch will not make. After a few seconds the machine will depower.
- (2) Intermittent failure to rewind/fast-forward wind/play a tape, or intermittent cut-out on these functions. Caused by lack of reel motor drive due to dry-joints on Q1504. This regulator is on a small subpanel at the far rear right-hand side of the machine.
- (3) Machine won't switch on. Clock o.k. but on LED not alight and no functions. This fault can be permanent or intermittent. In the latter case the machine runs all right for some time and then goes off: unless unplugged for about half an hour it will not switch back on. The first thing to do is to check the reset pulse at pin 16 of the syscon chip IC6001 (MN15342VGD). This is best done with a digital storage oscilloscope. If the reset pulse is present and o.k. the likely culprit is IC6001 itself, but I've also had identical symptoms due to the crystal X6001 (VSX0082). It's obviously quicker and cheaper to

replace this first, but if the fault is particularly intermittent and you don't want to spend too much time on fault finding it's worth changing both on spec. When the fault is permanent it's easy to determine which of these items is at fault. If the reset pulse is not present or is distorted, attention should be directed to QR6003, D6003, C6006 and C6008 – only rarely have any of these components been at fault however.

- (4) No back-up memory. You've guessed it, the famous gold capacitors, C75401/2. They are of the same type as those used in the NV366 and the same things happen when they leak, so be careful: never apply a hot iron to the electrolyte in this machine things can be a bit more serious if you do. Since the timer PCB has numerous plugs attached, the easiest way to replace the gold capacitors is to unclip the PCB and work at an angle from the side to solder. If you catch some electrolyte it invariably spits all over the print side of the syscon PCB which is directly below. This can cause some wonderful faults I've had to sort out one machine following this disaster and it's not something to be desired!
- (5) Intermittent tape chewing. It seems that whenever this fault appears on the job card the machine performs perfectly, never giving a hint of tape chewing despite hours on test. A check on the reel drive torques will however usually reveal a poor reel idler (VXP0581). Sometimes the torque reads o.k., but replacing the idler always seems to cure the trouble. As with any machine that suffers from this problem, ask to see the tapes sometimes they are cheap four-hour ones bought for £2.49 from a basket at the supermarket check-out!

The Head Problem

(6) Poor picture in the SP or LP modes or both. This is invariably due to faulty video heads. Before replacing them, check the back tension. The tentelometer reading half way through an E180 cassette, measured between the full erase head and the entry guide, should be 25-30g. Pull the head off the tape while making the measurement and make two or three checks. You will find that you need to adjust the back tension for 29-30g to get the best noise suppression in the trick modes.

What you will also usually find is that the back tension is 45-50g, so there's little wonder that the video heads have a short life (12-18 months)! When you replace the heads you find that, with the back tension reduced, the SP still frame is appalling. What you have to do is to set the back tension to 29-30g then adjust the landing position of the back-tension post to restore the perfect SP still. A point can be found where, with correct back tension, a perfect still can be obtained – it will take you a while the first couple of times you try! Don't be tempted to increase the back tension again as you will soon need new heads.

As mentioned earlier, replacement heads have a different part no. Remember also the need to remove all solder from the pins before trying to pull off the head. We've found that MCES heads are excellent. We don't fit them on chargeable machines, on the principle that these should be fitted with manufacturer's replacements, but find them ideal for our rental machines.

More Faults

(7) Won't play: arm's don't lace or drum not rotating. Unlike D1 machines this is not very common. The cause

is the same however - the mode switch (VES0251).

(8) Dim display. Usually the centres of the segments remain bright and the rest go dim, giving a display not unlike a "silvering" c.r.t. Digitron D7501 (VSL0037B) has gone low emission. Replacement is not too expensive.

(9) Will not switch on and will not front load. Front loading motor driver chip IC6005 (BA6209) faulty, loading the 9V rail if the machine won't switch on. Check the 9V rail.

(10) No deck operation when a cassette is in, or cassette comes out again. As with the NV370B, cassette up and/ or down switches (VSM0050) on carriage faulty.

(11) No clock, all deck operation displays illuminated, or wrong display. Output from regulator IC1501 (STK5361L) faulty, absent or low depending on symptoms. If the chip is short-circuit internally R1505 (68 Ω fusible) and F1002 (1·25AT, 20mm) will probably be open-circuit.

(12) No go. No -30V and unregulated 45V supplies. Usually due to random failure of R1002 (4.7 Ω).

(13) No capstan operation. Usually due to IC2004 (AN3281) or the capstan stator (VEK2208) being faulty. Very often if one goes faulty it damages the other, so it's best to change them both.

(14) Display strobing. X7504 (VSX0138) dry-jointed or open-circuit.

(15) No drum rotation. If the drives at pins 1, 2 and 23 of IC2003 (AN6387) are missing or faulty, suspect this chip.

(16) No go, no mechanism shuffle at switch-on. As with the NV370, the reel drive chip (IC6004, BA6209) is faulty.

(17) No go, no display or timer inoperative. Replace the timer microcomputer chip IC7503 (MN1512VTJ).

(18) Will not remember channel settings. Replace IC7504 (MN1228).

(19) Will not switch from SP to LP or vice versa. Switching chip IC2501 (AN6356N) faulty.

(20) Clock o.k. but when switched from standby the machine goes right off again. Excessive loading on the 30V line due to IC7504 (MN1228) being faulty. Lift supply pin 9 as a check.

(21) No go, fuse F1003 (1·25AT, 20mm) and R1505 (68 Ω fusible) open-circuit. IC1501 (STK5361L) faulty. Before replacing it make sure that there are no shorts across the output pins 2, 3 and 5.

(22) Intermittent or no drum rotation. This is usually due to C2018 (3.3μ F, 25V).

(23) Slight tear on playback picture and a barely audible tick on sound. Exit guide sleeve is running roughly. Replace roller post assembly (VXP0444).

(24) Creaking noise on playback, stops in pause. Usually the pinch roller (VXL1209) or capstan bearing VXD0091.

(25) Tape riding in cue or review, causing excess noise on the picture. Generally due to excessive friction in capstan bearing VXD0091.

(26) Knocking noise in cue/review. Idler riding due to slipped retainer. Replace idler (VXP0581).

Control Membrane

Now that these machines are a few years old the plastic control membrane tends to crack. This is more likely to occur when the machine is used in cold conditions or by a heavy-handed user. A replacement (VYK0733) isn't expensive and fitting one is fairly



straightforward though it does call for a fair amount of dismantling. Remove the top and bottom, then the top half of the front, as described earlier. Then unclip the lowermost part of the front from the three front bottom securing screw holes. Four red screws hold the flap assembly to the front. With this removed, take out the five screws that hold the flap together, across the bottom, and the tracking, slow tracking and sharpness control knobs. The two halves of the flap then push apart.

Remote Control Unit

The VSQ0357 handset used with these machines is a brown one and is pretty reliable unless subject to spillage. No-go failure is usually due to broken legs on the crystal or a defective MN6030B chip. A faulty chip can also cause excessive battery drain. As with all Panasonic remote control units, in the event of intermittent operation ensure that the battery is not a Duracell type – the rounded ends don't make good contact with the remote control unit's connectors.

In Conclusion

In conclusion, this is a very smart looking machine with plenty of features. It gives good results in both the SP and LP modes, unlike the earlier NV688. Except for the head problem reliability is good. Once the head problem (incorrect back tension) has been sorted out and the machine has been given a mechanical service it can be expected to give long, trouble-free service.

Letters

QUALITY OF COMPACT DISCS

I have been reading with great interest Joe Cieszynski's series on compact disc players. Despite the sophistication of the system and the techniques used, the quality of the discs themselves is unfortunately not all that it should be.

Giant leaps in hi-fi technology took place in the Seventies. These included metal tapes, Dolby, moving-coil cartridges, quartz-locked d.c. motor turntables, tuners with synthesis tuning, MOSFET-based amplifiers, ferro-fluid tweeters and a myriad of various poly-based loudspeaker cones. In the midst of all this we suffered from an appalling standard of record pressing quality, albums in particular. The record industry got its knuckles severely rapped, and as a result there followed a considerable improvement in the quality of pressing and surface noise. The industry's aim was presumably to save its profits, faced as it was with the ever more popular tape cassette medium.

Is this fiasco being repeated in the Eighties and Nineties with the compact disc? Once again there has been a mega-leap forward in sound reproduction technology, with CD players costing from as little as £50 to £2,500 or more. The average is around £200, for which you get advanced features such as multi-oversampling, bit multiplication, digital pulse axis control plus user benefits such as remote control and programmable track play. We are promised a signal-to-noise ratio of 100dB or more and harmonic distortion of -95dB, plus zero crosstalk, wow and flutter, hum and a superb frequency response.

Why is it then that after paying for the latest in CD player technology we find that not one compact disc in the charts even nearly approaches the performance of a standard player? I've found that the typical signal-to-noise ratio on many chart compact discs is a little over 60dB (about the same as a good record). In addition some have low levels of 50Hz hum, again typically -60dB, something that should have been banished from all recordings years ago. The best compact disc I could find, Paul McCartney's *Flowers in the Dirt*, clocks in a mere 75dB signal-to-noise ratio, some 25dB short of the promised 100dB.

The present state of CD recording quality makes complete nonsense of the latest state-of-the-art technology found in CD players. Compact discs are also not particularly cheap. I believe that the public is being grossly misled by the promised improvement when the quality of the recordings is so poor. So come on record industry, put some of those huge profits back into refurbishing your recording equipment so that it reaches a standard at least matching that of today's hi-fi systems. Les Sage, Sage Audio Electronics, Bingley, Yorks.

SEPTEMBER LEADER

Your September issue editorial says that our educational system "has a lot to answer for" because of the lack of engineering knowledge in the boardrooms of British companies.

As a teacher of A level physics I see all too many able pupils who would make good physicists or engineers choose careers in accountancy, banking and management instead. These pupils must have enjoyed their physics education because they had twice opted for physics, at GCSE and A level. They chose these other professions because these offer better career opportunities than those in engineering. They also appreciate that it's difficult for someone with an engineering background to break into the upper echelons of management.

Engineering suffers from a lack of status in this country. One reason for this is that people from motor mechanics to full members of the professional engineering institutions are labelled "engineers" alike.

While the educational system is not perfect, it has to be realised that the problems I've mentioned can be put right only by industry itself.

R. Skoczylas, Stafford.

Talking of the good old days is a common theme when it comes to domestic electronics and motor cars. One major complaint is that industries are now run by accountants. Every medium-sized customer has an account manager assigned to him, so has each department. The operations of those departments that are not directly revenue earning, such as stores, training, etc., are cut to the minimum. Financial controls are essential of course, but engineering driven by accountants has proved to be a counter-productive approach. It would be far better for accountancy to be a part of engineering syllabuses. Engineers would then be able to control the financial affairs of their departments and could put up ideas backed by figures.

The other problem of course is that we cannot beat the cheap labour of the Far East. But the next best thing could be provided by the DTI – a marketing and research unit accessible to industry and available free of charge. This would no doubt help in 1992.

J. Tharanee, Bicester, Oxon.

PLAYING NTSC TAPES

Several letters have appeared recently on the subject of playing NTSC tapes in the UK. No one to date has mentioned Panasonic's new L series machines. The NV-L28 plays NTSC tapes and produces colour on a PAL TV set – it converts the subcarrier to 4·43MHz and adds phase inversion, i.e. PAL switching. The line/field standard is not changed however, so there is still the problem of reduced height or picture rolling with some sets. Also the tapes cannot be copied by PAL VCRs.

The L20 and L25 use the same servo system. They will play NTSC tapes in monochrome without modification, though no mention of this is made in either of the handbooks or the service manuals.

Gareth Foster,

Whitton, Middlesex.

PROBLEMS WITH SPARES

Yet another moan about obtaining spares, this time for Sony products. As we don't have an account with Sony, being a service department rather than a sales shop, we rely on SES Staines for our spares. The advantage is that we can use a Barclaycard for payment,

thus avoiding the need to send a written order and the associated delay. The disadvantage is the difficulty in getting through on the phone.

After a long wait one morning I thought I'd try SES Dulwich. But they insisted on charging us retail prices if we wanted to pay by Barclaycard!

In the end I had to send a written order to SES Staines. Why is life made so difficult for the independent service department? And why are so many manufacturers' spares suppliers so inefficient and unhelpful? *M.J. Hobby TV Service*,

Horsham, West Sussex.

HELP WANTED

We are in need of a front panel for a Sharp VC4824 VCR. This is no longer available from Sharp or the company's distributors. If anyone has a surplus or second-hand panel, we'd be willing to buy it.

J. Rivas, Service Manager, Audio Visual Centre,
Northamptonshire Education, Covington Street,
Northampton NN1 5JU. Telephone 0604 230 567.

We require a stereo decoder chip for the Philips car radio-cassette unit Model RN712 – Philips say that they cannot help and don't even know the type used. The number 729 appears on the top of the i.c., which is a 14-pin device. We'd also be prepared to purchase a complete set. The same decoder is used in Model RN512.

Leon Electronics, 11 Woodend Close, Three Bridges, Crawley, West Sussex. Telephone 0293 20 536. Can anyone help me to obtain an M193C chip? We require it for the tuning/control board in a Network Model NWC1402 colour portable. In fact we've three of these sets, all good except for this i.c., so ideally we need three of them.

C.E. Toms, EPPS Services, 212 Teignmouth Road, Torquay, Devon TQ1 4RX. Telephone 0803 35 177.

CLEANING POTENTIOMETERS

Regarding F. Gregory's potentiometer tip (letters, October), there's another remedy for curing noisy potentiometers. I've used it for many years. Instead of applying a spot of fine oil to the track, clean it thoroughly with carbon tetrachloride applied with a medical cotton-bud stick (a readily available and convenient source of carbon tetrachloride or similar solvent is the thinner for typewriter correction fluid or the Thawpit type of stain remover). When the track has been cleaned sufficiently, apply a mixture of white petroleum jelly (Vaseline) and carbon tetrachloride - formed as a greasy paste in a watch-glass or similar container - with the aid of either a clean cotton-bud or the end of a used matchstick. Then rotate the potentiometer's spindle several times, the full traverse of the track. This completes the cleaning operation, leaving a fine, conductive film of lubrication. If the track is a carbon type, a small amount of loose carbon mixed with the jelly will form the equivalent of the graphite lubricant used with heavy engineering machinery.

Ivor Nathan, Southgate, London N14.

Test Report: Sadelta MC42 Pattern Generator

Alfred Damp

The time had come to replace our elderly pattern generator. It dates from the early days of colour TV and still works, well just about.

The features we wanted in a new pattern generator were: switchable rasters in the three primary colours; a peak white raster; colour bars; a crosshatch pattern; and, in view of the almost total absence of a test card, a test pattern with a circle. A generator that fulfills these requirements is the Sadelta MC42 TV Stereo Pattern Generator.

First a word about the "stereo" side of things. This is designed around the West German stereo sound system. Switches relating to stereo sound have been isolated in the UK version and the i.f.s have been modified to system I.

The test patterns provided are as follows:

(1) The main test pattern has a crosshatch grid with a circle, thus meeting two of the requirements listed above. The circle is digitally produced and is stored in an EPROM. Within the circle there are frequency gratings and a section of colour bars. The pattern also has two postbox rectangles with a vertical line within each: one box is white with a black line and the other black with a white line. Border castellations complete the pattern.

(2) Standard colour bars.

(3) Colour rasters in the three primary colours: secondary colours can be obtained by selecting two switches

together.

(4) A peak white raster.

In addition there are a black and white switch and an inverse switch that inverts the phase of the video and chroma

There are three outputs, r.f., i.f. and video, at the front of the unit. The r.f. output frequency can be selected from one of four tuning potentiometers, all of which cover the entire u.h.f. band. The potentiometers also include band switches for Bands I and III. The output level can be set for $10\mu V-10mV$. The i.f. output is switchable between the sound and vision i.f.s. The third output provides a composite video signal.

There's a scart connector at the back. This provides composite video, RGB and composite sync outputs. Inputs can also be fed in via the scart connector – video and two-channel audio.

Two sound tones are available, one at 1kHz and the other at 400Hz – the two tones can be on together. A switch enables the carrier to be modulated by an external source via the scart connector.

The generator gives superb results and is a real help in the workshop when working on colour TV receivers, VCRs and computer monitors.

The Sadelta MC42 is available from HRS Electronics Ltd., 11 Garretts Green Lane, Garretts Green, Birmingham B33 0UE at £331·10 trade plus VAT.

Servicing the Philips KT3 Chassis

John Coombes

The well-known KT3 chassis was used in a series of Philips and Pye models that were released over the years 1979–1982. They have 90° tubes with 14, 16 and 20in. screen sizes. There are two versions with different colour decoder panels: in the earlier panel there are two chips, types TDA2560 and TDA2523; the later panel has a single TDA3560 chip. There are non-remote, remote and remote plus teletext models. The complete model list is as follows:

Philips: 14C925, 14CT3005, 14CT3205, 16C927, 16C928, 16CT3015, 16CT3215, 16CT3715, 20C933, 20C934, 20CT3027, 20CT3227, 20CT3723 and 20CT3726.

Pye: 37KT3052, 37KT3060, 37KT3062, 37KT7225, 42K7227, 42K7228, 42KT3150, 42KT3152, 42KT3157, 51K7324, 51K7326, 51KT3237, 51KT3260, 51KT3262, 51KT3267, 51KT3272, 51KT7323 and 51KT7326.

We will deal with the various fault symptoms that arise and the items to check in each case.

No Results

The most common fault is no raster and no sound, and the most common cause of this is that the surge limiter resistor R6191 (4.7Ω) is open-circuit. If the fuses, FS6291/2 (2AT), are open-circuit, check the following items for shorts: the bridge rectifier diodes D6292/4/5/6 (type BY227), the associated protection capacitors C6292/4/5/6 (2.2nF), and if necessary the 2.2nF mains filter capacitor C6290. These capacitors sometimes go short-circuit intermittently.

If the HT1 line (output from the bridge rectifier) is low, check whether the chopper transistor T1463 (BUW84) is leaky or the reservoir capacitor C1460a (200 μ F) is open-circuit.

The next thing to check is the 129V output from the chopper circuit – at pin 6 of power supply module U7470. If the voltage is excessive, 300V or more, check for shorts/leaks in T1463 (BUW84), D1461 (BY208) and C1462 (470pF).

If the HT2 (129V) voltage is correct, check for faults in the line output stage. The chief suspect is the line output transistor T1562 (BU205). It may be faulty or without drive. In the latter case check whether any of the following are open-circuit: R1561 (2.7Ω), L1563 and the relevant secondary winding on the chopper transformer L1465.

If the HT2 line is low at less than 100V, check the resistance between the collector and emitter of T1562. If you get a short-circuit reading, check T1562 and C1568 (560pF). If the reading is in excess of 6Ω , remove the power supply panel (chopper drive) and check the voltages at pins 6 (280V) and 10 (12V) of the bridge rectifier panel. Check R6294/7/8 (each $10k\Omega$) if the voltage at pin 6 is incorrect or missing. If the 12V supply at pin 10 is incorrect or missing check C6300 (470 μ F), the 12V zener diode D6300 (BYX79/12) by substitution and if necessary R6299 and R6300 (both $8.2k\Omega$). Replace the power supply panel and check the voltage at pin 12 (should be 12V): if the reading is 30V or more check the chopper driver transistor T7353 (BSS38), the driver transformer L7351 (by substitution) and if necessary the bias resistor R6293 (150k Ω , on the bridge rectifier panel). If still in trouble check the voltage at pin 6 of the power supply panel. This should be at 129V. If the reading is less than 30V, check T1463 (BUW84), D1464 (BY208), C1559 $(0.1\mu\text{F})$ and C1560 $(0.39\mu\text{F})$.

If the set is tripping, the usual cause is the tripler. It breaks down internally and this sometimes leads to the destruction of IC7322 (TDA2581Q) on the power supply panel. If the tripler gets very damp around the e.h.t. cap and is left in this condition the c.r.t.'s final anode can be ruined, calling for a replacement c.r.t.

For repeated random tripping, check the mains plug, socket and fuse for intermittent operation. Make sure that the h.t. is correctly set at 129V and that the earthing connections to the c.r.t.'s external coating and the P band are in good condition. If necessary check the edge connectors of the modules.

Sound but no Raster

For no raster with the sound all right the first thing to check is that the c.r.t.'s heaters are alight. If not, check c.r.t. pins 6/7 for heater continuity, likewise for continuity at pins 13/14 of the line output transformer, and the plug and socket connections in between.

If the tube's heaters are alight, check the first anode voltage at pin 10. The reading here should be 350–400V. If this voltage is missing check back through R9602 and the plug and socket to the preset R1581 ($2.7M\Omega$) which is in series with the focus control R1572 ($24M\Omega$).

Beam current limiting is carried out via the contrast control circuit and faults here can remove the picture. Check C1565 (150pF) and C1566 (220pF) which can go short-circuit, the value of R1565 (24k Ω in 20in. sets, 39k Ω in 16in. sets and 47k Ω in 14in. sets) and if necessary zener diode D1423 (BZX79/C12) by substitution.

If still in trouble, check the voltage at pin 9 of the colour decoder panel. This is the field blanking input and the voltage here should be about 1.5V with the earlier panel and 1.1V with the later panel. If the reading is incorrect and the panel is an earlier one, remove the signal and check the voltage at pin 12 which should vary between 0.8-3V as the brightness control is adjusted from end to end. If the conditions here are incorrect, check the TDA2560Q chip IC3192 by replacement: if the voltage at pin 12 is correct, check T1426 (BC548) and, by replacement, zener diode D1435 (BZX79/B5V6).

If the voltage at pin 9 of the colour decoder panel (either version) is incorrect, check the field blanking transistor T1535 (BC558). If the 13V supply is not present at its emitter, check whether R1585 (1Ω) is opencircuit. Then if necessary check the field output and driver stages. The voltage at the collector of the upper transistor T1530 in the output stage should be 30V. If this voltage is missing check R1590 (3.3Ω), D1590 (BY406) and C1588 (680μ F). Items to check in the field timebase are T1530 (BD223), T1532 (BD234), R1531/2 (both 1.5Ω). T1523 (BC337) and C1521 (470μ F).

Colour Faults

Loss of one colour is usually caused by an open-circuit resistor on the RGB output panel. Check R4250 for red,

R4266 for green and R4282 for blue. These resistors are all 470Ω .

The TDA2523Q chip IC3223 on the earlier colour decoder panel can be responsible for a number of colour faults as follows: no colour, intermittent loss of colour, loss of one or two colours, loss of colour sync or a Venetian blind effect.

If the colour control has no effect, check the control itself (R1884, $4.7k\Omega$) and the TDA2560Q chip IC3192. Also check the edge connector, if necessary by replacement, and for cracks on the panel and the mother board.

Poor or weak colour can be caused by a purity fault. Ensure that this is not due to an external magnetic field. Then check the degaussing posistor R6292, C6293 ($0.1\mu\text{F}$), and the coils L1102/3 for open or shorted turns. Check for dry-joints in this area and that the plugs and sockets A21/2/3/4 are in order.

Tuning Drift

In the event of tuning drift, first check that the 155V (HT3) voltage is correct. The reservoir capacitor here is C1583, which was changed to $4\cdot7\mu F$ to prevent formation of a switch-off spot. Then check the 33V regulator D1401 (ZKT33B): replace it or see whether the 33V line varies when D1401 is subjected to heat and freezer. Resistors to check if necessary are R1401 (15k Ω), R1404 (270k Ω), R1405 (2·2M Ω) and R1410 (22k Ω). If the drift is still present the U321 tuner is suspect – check by replacement: If the drift is on one channel only, check the pushbutton assembly and the tuning potentiometer, again by replacing the unit.

No Sound

For no sound first check that switch S1013 is closed and that neither the switch nor the loudspeaker L1100 (16Ω) is open-circuit. Then check whether the output coupling capacitor C5182 ($220\mu F$) is open-circuit and that the 20V supply is present at pin 1 of the TDA2611AQ audio output chip IC5181. If the supply is low, check C5179 ($47\mu F$) and IC5181, which could also be responsible for distortion. If the 20V line is missing, check whether R1413 (4.7Ω) is open-circuit or C1413 ($1.000\mu F$) short-circuit. These items are on the main panel. Then check R6303 (2.2Ω) and D6303 (BY406) on the bridge rectifier panel.

If necessary, move back to the TBA120AS intercarrier sound chip IC5164. Check that 12.5V is present at pins 11 and 12. If this voltage is low or absent, check R5169 (270 Ω), C5168 (22 μ F) and C5169 (22nF), then if necessary IC5164 by substitution. Check whether the preset volume control R5166 (4.7k Ω) or the user volume control R1886 (4.7k Ω) is open-circuit.

Finally check whether coupling capacitor C5176 $(0.1\mu\mathrm{F})$ is open-circuit and for poor connections, dryjoints and cracks on the PCB.

Miscellaneous Faults

Faults sometimes arise in the EW modulator circuit. Check the three transistors in the following order: T1494 (BC548), T1490 (BD234) and T1485 (BC548). Then if necessary check D1562 (BY208) and/or C1562 (15nF) for leakage and the condition of the width control R1513 (10k Ω).

For poor line sync when cold ensure that C7336 is 4.7nF and not 2.2nF.

next month in

TELEVISION

• SERVICING THE SALORA J SERIES CHASSIS

Salora's success with its low-power consumption chassis based on the Ipsalo concept led to their use in other ranges, e.g. Hitachi and Grenada. Next month Nick Beer and Ian Bowden deal with the J series chassis, covering in particular the power supply, the RGB drive system and the enable word that allows some experations to be altered. With a faults list of course

BANDWIDTH CCMPRESSION TECHNIQUES

The main emphasis in TV development work world wide is now on high definition systems. This has led to increased attention being paid to ways of reducing the bandwidth required to transmit a TV signal. Tom 'vall surveys the techniques that have been devised to economise on bandwidth, from early work in connection with Nipkow discs to present-day digital systems.

• CD FAULTS REPORTS

Start of a new feature providing reader feedback on servicing problems with compact disciplayers, in the CD player series Joe Cieszynski starts on the servos.

• NORMAN'S SATELLITE TV INSTALLATION

The Room at the Back team carry out their first satellite TV installation. You can benefit from their experience!

PLUS ALL THE REGULAR FEATURES

ORDER YOUR COPY ON THE FORM BELOW:

| TO(Name of Newsagent) |
|--|
| Please reserve/deliver the December issue of TELEVISION (£1·50), on sale November 15th, and continue every month until further notice. |
| NAME |
| ADDRESS |
| |
| |

Long-distance Television

Roger Bunney

There was a decline in Sporadic E reception during August which wasn't a very good month. As the log below shows, reception was possible for the vigilant with plenty of time available. But the month was below average, and I feel that this must have something to do with the approach of the peak of the current sunspot cycle. Any comments on this?

5/8/89 TVE (Spain) chs. E2, 3, 4; RAI (Italy) ch.1A; Ercalano E2 (Italian private station); C+ L2 (France-Canal Plus); ARD (West Germany) E2, 3; ORF (Austria) E2a; ZTV (Zimbabwe) E2 – at 1805-1834, a Pop programme called 'Sounds of Saturday' via Trans Equatorial Skip with Sporadic E enhancement.

6/8/89 TVE £2, 3, 4; TVE-2 E2; RTP (Portugal) E3; RAI IA, B; ARD E2; C+ E3, 4; JRT (Yugoslavia) E3; MTV (Hungary) R1, 2; TSS (USSR) R1.

7/8/89 TVE E3, RAI E2.

8/8/89 TSS R1; CST (Czechoslovakia) R1, 2; JRT E3, 4; RAI IA, B; TVE E2, 3, 4; RTP E3.

9/8/89 SVT (Sweden) E2, 3; NRK (Norway) E2, 3, 4; TSS R1; CST R1; MTV R1, 2; JRT E3, 4; RAI IA; TVE E2, 3, 4; RTP E3; ORF (Austria) E2a; RUV (Iceland) E4.

10/8/89 TSS R1, 2; ŠVT E2; CST R2; C+ L2; TVE E2; RAI IA.

11/8/89 RAI IA, B; Ercalano E2; RTP E2, 3; TVE E3; ZTV E2 at 1808.

12/8/89 TSS R1; RAI IA; MTV R1. The Perseids meteor shower this day produced a lively Band I with many signal bursts being seen.

13/8/89 JRT E3, 4; ARD E2; TVE E3; TSS R2; NRK E2, 3.

14/8/89 RAI IA, B; Ercalano E2; C+ L2, 3; TVE E2, 3, 4; TVE-2 E2; YLE (Finland) E3, 4.

15/8/89 RAI IA; TVE E2, 3, 4; ORF E2a; ARD E3; C+ L2; NRK E2.

16/8/89 TVE E2, 3, 4.

17/8/89 RAI IA; +PTT (Switzerland) E2.

18/8/89 RAI IA, B; Ercalano E2; TVA (Italian private) IA; EPT (Greece) E3; JRT E3; MTV R1, 2; ORF E2a; ARD E2; C+ L3; TVE E2, 3; TSS R1.

19/8/89 TVE E2, 3, 4.

20/8/89 TVE E2; RAI IA.

22/8/89 RAI IA, B; Ercalano E2; JRT E3, 4; TVE E2; RTP E2, 3.

23/8/89 RAI IA, B; TVA IA; EPT E3; C+ L2; TVE E2, 3, 4; TSS R1, 2; CST R1; TVP (Poland) R1; RTSH (Albania) IC; TVR (Rumania) R3.

24/8/89 JRT E3; RAI IA, B; MTV R1, 2; C+ L2; TVE E3; RTP E2, 3; TSS R1, 2.

25/8/89 TVE E3, 4; RAI IA, B.

26/8/89 TVE E3.

27/8/89 TVE E2, 3.

28/8/89 CST R1.

30/8/89 NRK E2, 4; SVT E3.

There was an improvement in tropospheric conditions during August, thanks in part to settled hot weather, but no real openings occurred. The 9th produced Band III/u.h.f. signals from the nearer West German stations (NDR/WDR/ZDF) in the southern UK. The 11th produced an interesting Band I signal, Goettelborner Hoehe ch. E2, again in the southern UK. The 19th produced further West German Band III/u.h.f. signals while on the 29th in the south west Roger Fussell (Torpoint) logged TVE chs. E4, 5, 31 and 45 during a tropospheric lift – a degree of ducting was evident.

Auroral activity was noted on the 15th, with TSS ch. R1 at 2200 plus unidentified signals. Auroral effects in Band I were noted in Scotland on the 17th, 21st and 23rd, but no signals were identified.

Simon Hamer excelled with MS reception. On the 16th he logged DR (Denmark) ch. E5 and SVT-1 ch. E8 while on the 17th he had YLE chs. E4 and 9, TSS ch. R7 and TVP ch. R8 – really excellent going for the Band III MS catches.

One piece of late news is that a new transmitter at Liege, Belgium is now on test in ch. E39 with 100-200kW.

During early August I was on holiday at Bonne Nuit bay on the north coast of Jersey, about half a mile east of the massive Fremont Point IBA transmitter site. The BBC Les Platons f.m. transmitter is about a mile east of the bay. Les Platons used to transmit TV on ch. B4 – there are still many v.h.f. receiving aerials in position across the island. The local relay at Mont Orgueil Castle, Gorey, is on the battlements itself: a double-stacked log-periodic receives the Fremont Point horizontal group B signals, with retransmission on a more obvious single group W log-periodic with vertical polarisation.

My thanks to the following for sending in reports on reception and conditions this month: Peter Schubert (Rainham), Tim Anderson (St. Leonards), Cyril Willis (King's Lynn), Simon Hamer (Powys), Bill Cotterill (Tipton), Roger Fussell (Torpoint) and Iain Menzies (Aberdeen).

News Items

Low Countries: A new ch. E50 transmitter is operational in Brussels, co-sited with the RTBF Tele-2 ch.45 transmitter. It uses the PM5544 test pattern with the identification "Bruxelles CANAL 50" but no programme name. It seems that this and the Anderlues ch. E58 transmitter are to be used for the forthcoming Belgian Canal Plus service. Because of the ch. 50 transmitter the local Brussels relay has removed WDF-3 (Monschau ch. E50) from its cable, fearing co-channel interference. The Brussels ch. E45 and E50 transmitters both operate at 500W e.r.p.

Interesting that a TV-DXer logged a test pattern with the identification "RIAS-TV NATO" for one day only at 0530 local time from the Brussels ch. E56 transmitter which normally carries TV-5 Europe. Can anyone identify or comment? The Ekofisk oil platform TV service has been received on ch. E55 vertical with the Phillips Petroleum 66 identification and the text "EKOF-ISK TV CH 1" and on ch. E52 vertical with a subtitled Norwegian film.

One of the AFN TV channels at Shape/Casteau has been moved from ch. E34 to ch. E33.

Italy: Further information has been received from the BDXC on private Italian transmitters operating in Band I, as follows: Quarta Rete TV1, ch. IA. Corso Brescia

62, 10152 Torino. Audiovision ch. IA. Via Ferrucio 10, 20145 Milano. Telelomellina ch. IA. Corso Pavia 34, 27029 Vigevano (PV). Telelibera chs. IB and IC. Piazza Michelotti 3/a, 06100 Perugia. TSC Telespazio Compano ch. IA. Vicolo Forno, 82019 Sant Agata Dei Goti. Telebari ch. IB. Lotto Vigna Laura, 70125 Bari.

Yugoslavia: Dalibor Frkovich reports that TV Koper-Capodistria is to become independent of JRT. The channel is being taken over by the Italian entrepreneur Silvio Berlusconi who is well known for his interests in the Italian private TV market.

Amateur Radio: The RSGB reports that a 50MHz beacon is now in operation at St. Austell, Cornwall. The 45W transmitter has been widely received and nearby TV-DXers will certainly need notch filters or phasing systems to prevent or reduce breakthrough. Australian amateurs are now allowed to operate at up to 400W in the 50·05-50·2MHz band. Luxembourg is shortly to issue radio amateur licences for operation at 50MHz. On July 8th a Worcester based amateur, G1INK, heard a Japanese station calling CQ at 50MHz, using SSB. The time was 0815.

For Scanner Operators Only!

Those TV-DXers who operate scanners in Band I may find the following list from Robert Copeman helpful for identifying those distant F2 signals we hope to receive during the coming winter.

Ch. 1 New Zealand. Offset vision carriers.

45.2396MHz Mt. Studholm, South Canterbury. 10kW

45.24MHz Waiatarua, Auckland and Waikato, Te Aroha. 100kW horizontal.

45-25MHz Mt. Hedgehope, Southland and Kaukau, Wellington. 100kW horizontal.

45.26MHz Whakapunake, east coast and Hikurangi, Northland, 10kW horizontal, Queensway, Otago 100kW vertical.

Ch. A0, Australia.

46·17MHz Toowoomba, Queensland. 300kW horizon-

46.237MHz Cooma, NSW relay. 500W.

46.24MHz Wagga, NSW. 100kW horizontal.

46.2515MHz Gordonvale, Queensland. 500W.

46.258MHz Tamworth, NSW. 1kW horizontal.

Seven other lower power relays have not been included in this list.

Commercial Corner

Aerial Techniques is marketing a low-cost, dualstandard TV set with the following coverage: Bands I/III and u.h.f., systems B/G/I. Operation is from a 240V mains supply, an external 12V battery or its own internal rechargeable 12V Nicad stack. Aerial input is via a coaxial adaptor to a 3.5mm mono plug. The price is £69.95. For the address see the company's advertise-

The first issue of Geoff Arnold's new magazine Radio Bygones, mentioned in the August Teletopics, has now appeared. Geoff Arnold was of course previously editor of Practical Wireless. It's attractively presented in A4 format, with 32 pages, and contains much information on old radios, test equipment, wartime gear and so on. Coverage of vintage TV matters is planned for later. The first issue as a sample costs £2, a year's subscription (six

AERIAL TECHNIQUES

NEW low cost 41/2" screen TV/Monitor with full VHF/UHF coverage.



Frequency Coverage Band 1: 47-68MHz; Band 3: 175-230MHz; Bands 1/5: 470-860MHz.

Three way power source: 2-0v AC; 12v DC (lead included) or dry batteries. A unique charge unit featured within this TV will charge rechargeable batteries.

Telescopic whip antenna together with 75 ohm aerial input socket. This TV is ideal for home and mobile use, perfect for the TV-DXer and Amateur alike.

This model is fully guaranteed for 12 months, and costs just £69.95 inclusive of VAT, carriage & insurance to any UK destination is £5.50.

Aerial Techniques, the company that knows the TV-DXing hobby, carry a comprehensive range of aerial equipment for every type of installation - and with a huge range of filters, amplifiers, cables, rotators, masts and supporting hardware. We specialise in Multi-standard TV's & Video recorders, it's all featured in our comprehensive 29 page illustrated Catalogue priced 75p, why not send for your copy today?

ACCESS & VISA Mail and ACCESS & VISA Mail and
Telephone orders welcome. (24hr. service)

WISA

BARCLAYCARD

VISA Deliver rormally 7-10 days.

KENT ROAD. PARKSTONE. POOLE. DORSET BH12 2EH Te; 0202 738232

issues) costing £12 (£13 overseas). For details apply to G.C. Arnold Partners, 8A Corfe View Road, Corfe Mullen, Wimbourne, Dorset BH21 3LZ.

Satellite TV News

PanAmSat at 45°W has been testing two new downlinks, at 11.62GHz and 11.67GHz. The 625-line signals have PAL colour. A sixth horizontal downlink from Intelsat at 1°W has been on test and NRK has been seen from the ECS satellite at 10°E. Various OB links via this satellite were noted during August.

The newly launched DFS Kopernikus satellite at 23.5°E was carrying the following services at the end of August: SAT-1 at 11.53GHz, RTL+ Nord at 11.59GHz, Eins Plus at 11.61GHz and RTL+ German at

IRISH T.V. DEALERS

VIDEOS - UHF/VHS Serviced, F/L Ferguson 3V44/45, Panasonic NV230, Samsung 616/720, Finlux 1010/20 & Grundig from £180 each.

TV's - UHF/VHF - Most makes in stock 8, 16, & multichannel remotes. From £75 each. Untested £30 each. EXPORT ENQUIRIES WELCOME

T.V. TRADE SALES

E.D.I. House Ballyfermot, Dublin 10 Tel. 264139/263517 (Beside Cantrell & Corcoran)

also at Centre

Unit 11 Galvone Enterprize Galvono, Roxbord, Limerick

11.66GHz. The 11.59GHz link has been seen carrying other services and by the time this is read the downlink menu will certainly have changed! It seems that the German post office DBP will use the satellite to duplicate the TV SAT-2 feed when it becomes fully operational next year. At present the intention is to move the West 3, BR3, SAT, PRO 7 and Tele 5 services from 60°E to Kopernicus DFS-1. Teleclub may also be a DFS customer at a future date.

Ian Waller reports that the signal level from the Intelsat craft at 63°E has increased, suggesting that the craft has been reorientated. Signal levels in the eastern

UK are comparable to the German downlinks at 60°E.

The Soviet Gelikon DBS project and the Spanish Hispasat craft are due to come into operation in 1992. A second Hispasat craft at 31°W is due for launch in September 1992. The two Hispasat craft will have two 80W TV channels plus one footprint beamed on the Canaries and another to the Americas.

Following various transponder switch-off problems, all but two of Astra's 19·2°E transponders are now fully operational. NRK has been noted at 11·179GHz from ECS F5 at 10°E and Intelsat 24°W has been noted with carriers at 10·95, 11·003 and 11·67GHz.

Berlin Radio Show Report

George Cole

Some interesting new technology was on show at this year's International Audio and Video Fair (also known as the Berlin Funkausstellung). What follows is but a snapshot of the events since IAVF is very big (398 exhibitors were spread over 25 halls covering 52,000 sq. ft), very crowded (it's a public event that attracts nearly half a million visitors) while most of the language and literature was naturally in German.

Longer VHS Playing Time

Two developments from BASF and Nokia (which owns the ITT Nokia and Salora brands) have extended the recording and playback time of the VHS format. BASF showed an E300 tape which gives a recording time of five hours at the standard play speed and ten hours in the long play mode. The tape has an ultra-thin base film, just 9μ m thick compared with the 13μ m base film used with E180 tape. Apparently JVC, which holds the VHS patents and licences, is not very happy about this, suggesting that the thinner tape may snap in older or



One of the "lap-top" VHS VCR plus monitors on show. This is the Panasonic model, with 5in. LCD display.

misaligned machines. According to a BASF spokesman however the E300 tape has been test marketed in Austria for a year without any complaints about its durability. BASF says that limited supplies of E300 cassettes will be on sale in the UK before Christmas, priced at £6.99 or less.

Nokia introduced a twelve-hour VCR which increases the usable time by running the tape at one third of the normal speed, i.e. 0·78cm/sec – EP speed? According to Nokia the use of a new development called Active Sideband Optimum (ASO) means that the picture quality is better than that of conventional LP operation. ASO eliminates the crosstalk problems from which the dense "EP" tracks would otherwise suffer. Nokia says that the ASO circuitry is relatively inexpensive, which means that it could become a standard VHS feature.

JVC has objected to ASO because "EP" recordings won't play on standard VHS decks offering SP and LP operation. But it seems likely that ASO decks would offer three speeds. Perhaps JVC's objections are the reason why no launch details of ASO machines were announced.

Less contentious was the Hitachi VT-L240 NTSC VCR which uses audio signal compression techniques to provide up to 240 hours of continuous audio recording from a two-hour cassette!

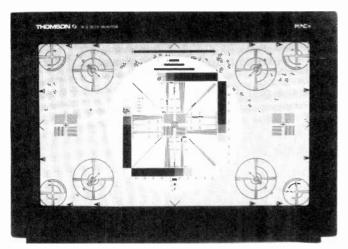
Video Equipment

JVC, Hitachi and Panasonic showed prototype VCRs equipped with the F/C (full/compact) mechanism described in the August issue of *Television* (see pages 774-5). This accepts full-sized VHS and VHS-C cassettes without the need for an adaptor. Surprisingly there isn't a standard for the F/C system: all three manufacturers have developed their own versions.

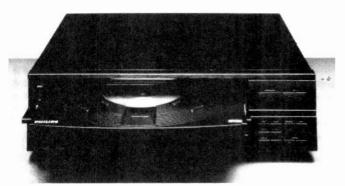
Also on show was the new 45/90 minute VHS-C tape which again should be on sale in the UK by Christmas.

Hitachi and Panasonic have produced portable "laptop" VHS VCR/monitors. Hitachi's Model VT-LC50EM has a five-inch LCD screen, SP/LP operation and a three-way power supply. Its dimensions are 370mm wide, 89mm high and 214mm deep, the weight being approximately 3.4kg. Panasonic's lap-top machine also has a five-inch LCD screen. It includes a TV tuner and hi-fi stereo sound (through headphones).

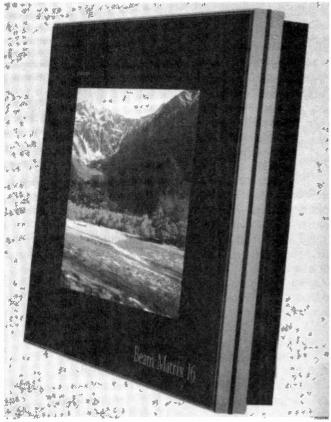
JVC displayed a VHS-C portable system called Com-



A Thomson high-definition monitor with 16:9 aspect ratio display. Note the HD-MAC resolution chart.



The latest Philips CDV player, Model CDV495, is a combitype that plays 8, 12, 20 and 30cm discs.



Panasonic's 16in. beam matrix display, a thermionic flatscreen arrangement that produces 630,000 pixels.

pact C. It consists of camera, LCD monitor, tuner and recorder separates.

Smaller full-function VHS-C camcorders are on the way, thanks to a new ultra-lightweight chassis developed by Panasonic. This is twenty per cent lighter than current types and uses high-density chip mounting technology. A Panasonic spokesman said that full-feature VHS-C camcorders will eventually dip under the 1kg mark.

Two other Panasonic developments are the "Electronic Telephoto Effect", which increases an ×8 zoom to ×16 electronically, and the FIT (frame interline transfer) CCD imager which is claimed to eliminate vertical smearing.

There were a number of VHS and S-VHS camcorders on show. JVC's GR-S707 was the most interesting one. Although it's an S-VHS-C camcorder it uses a full-size (62mm) head drum. JVC says that this improves the picture quality.

CDV Players

Compact disc video (CDV), which combines moving analogue video with CD digital sound, was much in evidence. According to the system's inventor Philips the market for CDV players should soon reach 960,000 a year world wide: projected sales are 60,000 in Europe, 100,000 in the USA and 800,000 in Japan. There are now 7,000 CDV software titles, with 4,000 in the USA and 300 in Europe. Philips expects the European library to increase to 500 by the end of the year. Many of these are music titles, but software companies are showing a greater interest in the medium.

CDV hardware was shown by Philips, Sony, Grundig, Marantz, Pioneer and Matsushita (Panasonic/Technics). The Philips CDV495 is a combi player that handles 8, 12, 20 and 30cm CDV discs. First-generation CDV players incorporated analogue sound circuitry so that the older LaserVision discs could be played. Philips has now removed this but, in response to criticism from LaserVision supporters, has promised that the analogue sound will return with the next generation of players. The CDV495 also has an edit function which makes it easy to copy CD or CDV sound on to audio cassettes. The user simply keys in the tape length (e.g. C90) and the CDV495 calculates the number of tracks that will fit on to it and plays them. I don't know what the music companies will make of this feature.

Sony's MDP515D multi-disc CDV deck offers a horizontal resolution of 440 lines and variable speed playback from 1/90th to ten times normal speed. I was very impressed with the picture quality and the absence of any noise bars during trick play. The MDP515D plays PAL or NTSC discs and the sound track has ×8 oversampling with an 18-bit digital filter. It goes on sale in Germany this autumn at the equivalent of about £730, but there are no plans to date for a UK launch.

JVC showed a graphics player, Model XL-G512, which plays normal CD audio discs and those encoded with simple graphics and text.

Philips held a player demonstration of its CD Interactive (CD-I) system which combines sound, graphics, text, pictures and 1/4 screen motion video on a 12cm disc. CD-I players combine a computer, disc drive and a CD audio player in one unit. Initial plans were for CD-I to go on sale in the USA this year and in Europe next year, but the launch will now be in 1992. The reason for this delay is that Philips and Matsushita are developing

CD-I machines that will provide full-screen, full-motion video.

Looking even farther ahead, Thomson showed an erasable CD disc that uses a magnetic-optical recording system. The disc can store up to four hours of pictures and sound.

High-definition TV

The European high-definition TV project, Eureka 95, was out in force at the IAVF. The Eureka press conference, held in the HD-MAC studio, was packed out and attended by many of Eureka's top officials. What strikes you is how fast the Eureka team has worked to develop HD-MAC. The project was announced in 1986, presented at the 1987 IAVF and first demonstrated at the 1988 International Broadcasting Convention. The first complete production system was shown at this year's Montreux International Television Symposium and the final phase, satellite transmission, was achieved at Berlin.

The plan is to use HD-MAC at the 1990 World Cup finals, with broadcasts beginning for the 1992 Olympic games, though the feeling is that 1995 is a more plausible date. Thirty HD-MAC programmes are available: broadcasting companies in Portugal, Holland, Austria and the UK (the BBC) prepared productions for the HD-MAC studio at Berlin. The idea is to establish a stockpile of programmes before regular HD-MAC broadcasting services begin. The HD-MAC pictures I saw, under less than ideal viewing conditions, looked sharp and clear and didn't seem to suffer from the judder I've noticed with the Japanese Hi-Vision HDTV system. Other journalists commented that the UK provided one of the best HD-MAC demonstrations.

The Japanese haven't given up hope of getting Hi-Vision accepted as the world standard for HDTV. Companies that demonstrated Hi-Vision included Sanyo and Toshiba, and Hi-Vision equipment has been lent to a number of European broadcasting companies.

One of the biggest surprises was Thomson's announcement that it would start to sell wide-screen HD-TV sets with a 16:9 aspect ratio next year, at a price of around £3,000. The general feeling was that this was a little optimistic.

Philips demonstrated a prototype HD-MAC VCR which can also handle D2-MAC, PAL, SECAM and NTSC signals. The HD-MAC signal is sampled at 20·25MHz before being compressed and converted back to analogue form. It undergoes filtering, pre-emphasis and frequency modulation before being recorded on tape as two parallel tracks. Recording time is one hour and twenty five minutes.

It was announced that the Eureka project may be extended a further two years to enable second-generation professional and consumer HD-MAC equipment to be developed.

Improved-definition TV

Many companies including Philips, Grundig, Blaupunkt and Thomson showed Improved Definition (ID-TV) sets. This is a receiver-based system that enhances the conventional broadcast signal, though there doesn't seem to be an official specification. ID-TV sets provide flicker-free pictures by doubling the field frequency to 100Hz. Information on how this is done is

sketchy. It seems that the received fields are digitised and stored in a memory. They are then read out at twice the normal field frequency. Some sets use the digital/memory system for freeze frame, picture-in-picture and zoom effects.

Philips demonstrated a wide-screen MAC TV set that automatically adjusts from a 16:9 to a 4:3 aspect ratio and vice versa.

Projection TV

A fair number of companies showed projection TV systems. Grundig's had a 115in. screen, 100Hz field rate and digital trick effects. JVC's super LCD projector consisted of three 1.76in. LCDs that act as filters, each with 210,000 pixels. The horizontal and vertical definition are given as 350 and 450 lines respectively. JVC says that the system doesn't even require a screen, a white wall being sufficient to provide good picture quality. Panasonic's 40in. LCD projector weighs around 100lb and has a depth of 16in.: the three LCDs have 312,000 pixels each. Philips showed a 50in. HD-MAC projector with a claimed resolution of over 1,000 lines.

At the other end of the scale Toshiba showed a 4in. multi-standard LCD TV set while Philips had a combined 3in. LCD TV/radio that weighed just 500g.

Beam Matrix Display

Another Panasonic innovation is Beam Matrix TV, a flat-screen system that gives good picture quality. The system uses 28 linear electrodes about five inches in length instead of a c.r.t. gun. These electrodes produce 3,200 beams that form a small, rectangular display with digital control and drive. A 16in. beam matrix set on show had a display unit with a thickness of just 4in. The power consumption is said to be roughly the same as with a conventional c.r.t.

News Round-up

Another innovation was TOP (table of pages) text, a teletext system that works like a personal computer display. The TOP remote control unit has just four keys that are used to select items from an on-screen menu. TOP is quicker than Fastext, but UK broadcasters are said to be lukewarm about it.

JVC and Hitachi demonstrated VCRs with built-in MAC tuners. As this was Germany, the D2-MAC system predominated. There are also plans for digital satellite radio broadcasts that will give CD-quality sound. Philips plans to launch digital audio satellite tuners in Germany this year.

Still video had a low profile, though Canon showed a still video camera which should be available in Europe for around £500 from the end of September.

Aiwa showed a portable digital audio tape (DAT) recorder that can be attached to an analogue/digital converter and used to copy 1,800 still video images on to DAT tape. Sony demonstrated the Hi8 system and Grundig is now marketing Video 8 equipment.

Toshiba demonstrated a 3D video system. Hitachi went one better with 4D vision using holograms.

Finally, Blaupunkt showed a TV set with an exchangeable front panel. The panel slots into the front of the 55cm set and the user can select the panel that blends best with the domestic decor. How long before we see paint-your-own TVs?!

The High-band 8mm Video System

George Cole

This autumn sees the launch of the European version of the Hi-band (Hi8) video format: Hi8 is Video 8's answer to the Super VHS format.

Video-8 Recap

We'll start with a brief recap on the 8mm video system for a comprehensive account of this system, see Eugene Trundle's five-part series that started in the April 1987 issue of Television. Video 8 is a world standard format that has been adopted by 127 electronics companies. Some people talk of "Sony's Video 8 format", forgetting that it's an international system to whose development numerous companies contributed. Sony must however be given the credit for getting the 8mm system on to the market and keeping it in the spotlight. The format takes advantage of technological advances that have been made since the first half-inch video formats, such as VHS, were launched in the late Seventies. In particular the 8mm system uses new head and tape technology that enables shorter wavelengths to be recorded and higher density recording.

The main features of the 8mm system are: use of metal tape and an audio-size cassette with up to three hours' recording time (PAL LP mode); use of a.t.f. (automatic track following); absence of fixed audio and control heads; f.m. audio (mono) recorded helically at the l.f. end of the spectrum, or alternatively PCM digital audio (mono/stereo) recorded in its own dedicated section (30° rotation) of the helical track. Its basic specification is: f.m. luminance carrier deviation 4·2-5·4MHz; luminance bandwidth 3MHz; chrominance down-converted to 732.422kHz; f.m. audio 1.5MHz \pm 100kHz. The 3MHz luminance bandwidth provides a horizontal resolution of a little over 260 lines. The pictures are slightly sharper than those obtained with the basic VHS system, though the introduction of VHS HQ processing narrowed the gap. Fig. 1 shows the frequency spectra for the 8mm, Hi8 and S-VHS systems.

The launch of the S-VHS system in the NTSC countries in 1987 and in Europe in the following year led to speculation about a Super Video 8 system. The S-VHS system has a luminance bandwidth of over 5MHz, giving a horizontal resolution of over 400 lines. How would the Video 8 camp respond to this?

Enter Hi8

The answer is the Hi8 format, which was announced in March 1988 with the first equipment being launched in Japan last spring. The luminance carrier deviation is 5·7-7·7MHz with a bandwidth of 5·3MHz, giving a horizontal resolution similar to that of the S-VHS system. The deviation is wider however at 2MHz, which improves the signal-to-noise ratio by about 4·4dB in comparison with the basic 8mm format. Another Hi8 improvement is the shorter pre-emphasis time-constant, reduced from $1\cdot3\mu$ sec to $0\cdot47\mu$ sec, which reduces the edge noise and crosstalk and improves the waveform. The luminance and chroma signals are kept separate to avoid crosstalk,

and the same socket configuration is used as with S-VHS, i.e. a 4-pin S-connector provides the full resolution with improved colour while a second socket provides composite video with a resolution of around 380 lines.

The TSS Head

An improved 8mm head has been developed to make possible the shorter Hi8 wavelengths. Both the standard and Hi-band 8mm systems use a tilted sputtered sendust (TSS) head, which is a composite of ferrite and sendust. The ferrite is a mix of iron oxide (Fe203), manganese oxide and zinc oxide. The three are powdered and mixed then heated to 1,200°C and pressed into a rod that forms the source of the ferrite crystals. This rod is placed in a platinum crucible and heated to 1,700°C, at which temperature it melts. Single ferrite crystals are formed as the crucible cools. The ferrite is then sputtered with sendust - a mixture of iron, aluminium and silicon which improves the recording characteristics. A Hi8 head has a gap of just 0.2 microns, which compares with 0.25 for S-VHS, 0.26 for standard 8mm and 0.3 for VHS. Improved metal powder (MP) or metal evaporated (ME) tape is used – see later.

Compatibility

Compatibility between the Hi8 and standard 8mm systems is as follows: Hi8 equipment can play and record in both the standard and Hi8 modes, but standard equipment cannot play Hi8 recordings. The blank tapes

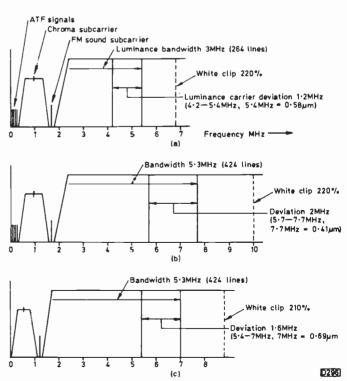


Fig. 1: Comparison of video standards, (a) basic 8mm, (b) Hi-band 8mm, (c) S-VHS.

are fully interchangeable between the two systems, though only Hi8 cassettes can be used to make Hi8 recordings – they have an identification hole. Hi8 machines have an automatic setting which, in the on position, always records in the Hi8 mode – except when a standard tape is inserted. In the off setting the machine always records in the standard mode, regardless of which type of tape is used.

Performance

How does Hi8 look? I had the chance recently to see the system in action in Tokyo, and was suitably impressed. There's a definite improvement over standard 8mm, with better definition, less noise and sharper colour - it certainly matches S-VHS. The standard 8mm chrominance and audio (f.m.) specifications remain unchanged. It seems that it would have been very difficult to design circuitry that could cater for alterations of both the luminance and the chrominance carriers. Other improvements have however been made to the colour signal. Regarding sound, there's to be a new f.m. stereo system for 8mm video but it isn't part of the present official Hi8 specification. It involves an additional audio carrier at 1.7MHz ± 50kHz. The present 1.5MHz carrier will be used for the left channel, with L + R information, while the 1.7MHz carrier will be modulated with L - Rinformation. The system is compatible with mono 8mm equipment which simply reads the L + R information modulated on to the 1.5MHz carrier. Sanyo plans to launch a stereo f.m. Hi8 camcorder this autumn. Cannon has already launched one. Apparently it's simpler and cheaper to add stereo f.m. sound to 8mm camcorders.

ME Tape

Hi8 is the first video format to call for the use of ME tape. Although ME tape was part of the original 8mm specification, production difficulties have kept it off the market until now. This type of tape is essential for European Hi8 use however: with the luminance carrier at $7.7 \mathrm{MHz}$ (see Fig. 1) the wavelength is $0.41 \mu \mathrm{m}$. Conventional ferric oxide tape can record wavelengths down to around $1 \mu \mathrm{m}$ while standard MP tape has a lower limit of $0.5 \mu \mathrm{m}$. For the NTSC Hi8 system the upper limit of the luminance carrier deviation extends to $0.49 \mu \mathrm{m}$.

ME tape has other advantages. The carrier-to-noise ratio is some 6dB higher than with MP tape (see Fig. 2).

Table 1: Comparison of tape characteristics

| Characteristic | MP | Hi8 MP | ME |
|--------------------------|-------|--------|-------|
| Thickness (microns) | 10 | 10 | 10 |
| Magnetic layer (microns) | 3 | 3 | 0.2 |
| Base film (microns) | 6 | 6 | 9 |
| Back coat (microns) | 1 | 1 | 0.8 |
| Coercivity (Oersteds) | 1,450 | 1,500 | 1,050 |
| Remanence (Gauss) | 2,400 | 2,500 | 3,700 |

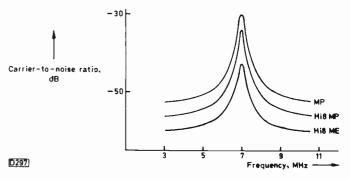


Fig. 2: The carrier-to-noise ratio of different types of metal type.

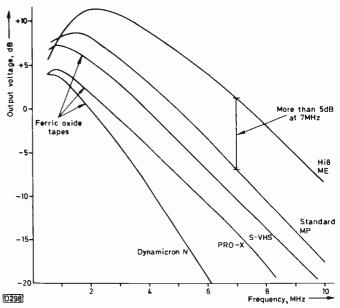


Fig. 3: Typical output curves for different types of tape.

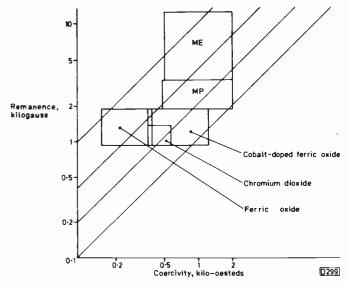


Fig. 4: Comparison of tape characteristics.

Because of its composition it's also a better recording medium. With a conventional tape the magnetic layer includes about 50 per cent of non-magnetic material – solvents, binders and lubricants. This reduces the recording density. The magnetic layer of an ME tape does not contain binders, so there is only about 20 per cent of non-magnetic material. The result is a much higher remanence (around 3,700 Gauss, compared to 2,500

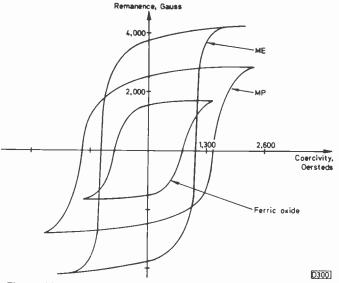


Fig. 5: Hysteresis loop characteristics.

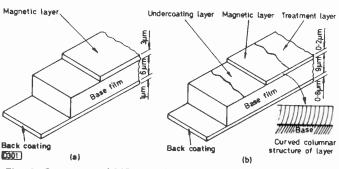


Fig. 6: Structure of MP tape (a) and ME tape (b).

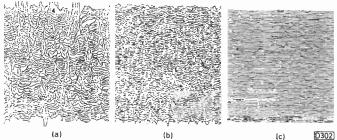


Fig. 7: Surface roughness comparisons, (a) ferric oxide tape, (b) MP tape, (c) ME tape.

Gauss with MP tape), higher coercivity and greater output (at 7MHz the output is 5dB higher than with MP tape, see Fig. 3).

The theoretical improvements provided by ME tape in comparison with standard ferric oxide, chromium dioxide, cobalt-doped ferric oxide (as used for S-VHS equipment) and MP tape are shown in Fig. 4. If you examine the hysteresis loop (Fig. 5) however you'll see that in practice ME tape's coercivity is lower than that of MP tape. This is because the coercivity of ME tape is deliberately reduced during production in order to maintain compatibility between the two types of metal tape. Sony's ME tape has a coercivity of 1,050 Oersteds, while for MP tape the figure is 1,500 Oersteds.

Hi8 MP tape is basically standard MP tape with finer particles and a higher packing density. This increases the coercivity and remanence a little. Table 1 shows the basic specifications of the three types of metal tape. The Hi8 system pushes MP tape to the limits, and the particles are hard pressed to record the highest NTSC



Sony's CCD-V900 Hi8 Camcorder.

frequencies. Sony has no plans to market Hi8 MP tape in Europe – it couldn't cope with the shorter wavelengths of the 625-line Hi8 specification.

ME Tape Production

The basic ingredients of the ME tape made at Sony's Sendai plant are cobalt (80 per cent) and nickel (20 per cent), the main purpose of the nickel being to provide anti-corrosive properties and control the coercivity. The alloy is heated to $2,000^{\circ}$ C in a vacuum chamber. At this temperature the metal boils. Controlled amounts of oxygen are added at this time to control the coercivity and to oxidise some of the cobalt to form a protective layer. The metal vapour is guided on to the base film which is cooled to -25° C by liquid Freon. When the vapour touches the base film, which runs at a speed of 40m/sec, it condenses to form a metal film of just $0.2\mu\text{m}$ thickness.

As a result of this process the particles in the magnetic layer have a curved columnar structure that increases the recording density. This is illustrated in Fig. 6, which shows the structural differences between ME and MP tape. There are magnetic and non-magnetic particles in the ME magnetic layer, the former being cobalt-nickel and the latter oxidised cobalt. To reduce friction, the top surface is treated with a fluoride-based compound. Fig. 7 compares the average roughness of ferric oxide, MP and ME tape. Below the magnetic layer there's a layer of very fine particles to improve the magnetic characteristics and durability. The base film is made of specially treated PET plastic.

Hardware

Sony's first 625-line Hi8 camcorder, Model CCD-V900, will be released this autumn. It has a ½3in., 420,000 pixel imager giving a horizontal resolution of 450 lines. Minimum illumination is 7 lux. The machine records in the SP mode only but has dual-speed playback (SP and LP). Features include a new dual-capsule microphone which can be switched between a uni- and omni-directional response; six fast shutter speeds (up to 1/10,000 sec); an index search system that can be used incamera; a ×8 zoom; a digital superimposer; and a line input socket. The CCD-V900 measures 126 × 136 × 352mm, weighs 1.5kg without the battery and cassette and will sell for around £1,300.

Acknowledgment

In conclusion I'd like to thank Sony's Video and Magnetic divisions for their help in the preparation of this article.

TV Fault Finding

ITT CVC1210 Chassis

We replaced the line output transformer because of insulation breakdown (a hole in the side). This resulted in a blank raster with no picture. After much component checking and replacement we found that C542 (33nF, 250V) in the earthy side of the e.h.t. circuit was open-circuit. This was upsetting the operation of the beam limiter circuit.

J.H.

Philips K40 Chassis

There was no remote control response and no front keyboard operation with this set. We found that D6103 on the VST tuning module was short-circuit. Another of these sets came in with no picture or teletext. The RGB/status line turned out to be at 2V because T7206 (BC558) on the scart/interface module was short-circuit collector-to-emitter.

P.B.

Philips CP90 Chassis

One of these sets came in with a dead power supply. The start-up voltage was being lost at the junction of R3661 and R3673 because transistor T7673 was conducting due to a leak between pins 4 and 5 of the CNX62 optocoupler.

On another of these sets there was a power supply fault that confused the microcomputer chip. The symptoms were no results with a pulsing power supply. If a dummy load was connected in place of the line output stage the h.t. produced was low at 60V instead of 95V. The cause turned out to be the BZX79-F6V2 zener diode D6702 in the voltage comparator circuit – it was leaky. Out of curiosity I refitted the faulty diode to find out what was causing the pulsing effect. Thyristor 6726, which conducts in the standby mode, was being intermittently triggered by the microcomputer which was rather confused as it was getting the power fail signal and no reset pulse.

P.B.

Philips K40 Chassis

This set had no sound or vision and E3 showed on the display. The 141V line was low at 80V and a chirruping noise came from the power supply. The output from the power supply was still low with the loads disconnected and a dummy load provided instead, though it rose to 130V with no load at all. Suspecting a dried-up electrolytic I bridged likely candidates to no avail. Attention was then turned to the regulation stage, where transistor T7121 was found to be open-circuit. According to Philips Service Link, transistors T7121/2/3 often suffer when the chopper transistor goes short-circuit.

ITT ST28TX

This set had no sound and a blank raster. The channel display was showing rubbish and didn't respond to remote control commands. I soon found that the reset line to the control microcomputer chip IC701 was stuck at 4V. Both the CCU SEL06 and the MDA2061 were leaky from their reset pins to chassis. New chips brought

Reports from Philip Blundell, Eng. Tech., Jeff Herbert, Mick Dutton, lan Bowden, Nick Beer, Stephen Leatherbarrow and P. Rafferty

back the picture and the display but there was still no sound. The mute line was operative as D701 (1N4148) was leaky.

Why had all these items failed? They are all supplied from a three-terminal regulator whose chassis connection goes through a metal screening can which was dryjointed . . . P.B.

ITT Compact 80 110° Chassis

This set came from another engineer with a note saying no results. He'd spent considerable time on it and had changed or checked most of the semiconductor devices and high-value resistors in the power supply. Measurements showed that there was no output at all on the 145V and 24V rails. We lifted D732 and D733 to isolate the power supply from the rest of the set and provided a dummy load with a BY127 diode and a bulb. We now had about 10V across the bulb and spent a considerable time checking through the power supply.

After a break and a fresh look at the circuit diagram we realised that with D732 disconnected there was no supply to the secondary side of the circuit. When D732 was refitted the bulb came on with a healthy voltage across it. The h.t. wasn't the full 145V however as the line oscillator wasn't running. When the line output stage was reconnected the power supply shut down. We checked everything for shorts but couldn't find any, so the line output transformer was condemned. When a new one was obtained and fitted the set sprang to life. Note that although the transformer looks the same as and is pin compatible with the one in the CVC1200 chassis they are not interchangeable.

M.D.

Philips KT3 Chassis

Rolling and excessive height turned out be due to the field scan coupling capacitor C1521 (470 μ F). We've since had several more sets with this fault. M.D.

Salora 1H Series (Ipsalo 2)

There was an intermittent fault on this set. The picture would suddenly go dark, accompanied by a snick from the back of the set. After this the brightness would recover more slowly. We found that the tube's first anode voltage dropped when the fault occurred. The 1kV supply was o.k. however and didn't vary. The voltage at the supply end of the first anode control on the c.r.t. base panel did drop slightly, as did the voltage at the slider, but the problem was at the earthy side of the control where the voltage dropped from around 250V to nearly zero when the fault was present. This was found to be due to leakage from CH5 $(2\cdot2\mu F)$. Tracking across beneath this capacitor would momentarily short it out.

Salora 22J20 with Videocolour Tube

The complaint was of a buzzing noise even with the volume turned right down. When the set was first switched on in the workshop we didn't hear anything.

After several hours' running however quite a loud rattling noise could be heard. This came from the bonded scan coils and sounded like something loose inside. After wasting some considerable time removing the coils only to find nothing apparently lose we discovered that one of four metal strips fitted just to the front of where the coil windings fold inwards had become loose. They had originally been held on with yellow adhesive tape, but this had become brittle with age and had let go. The problem was cured by sticking all four on with glue and covering this with silicon rubber.

B and O MX2000 (31XX Series)

This set was brought in for no go – only the channel number indicator was alight. The chopper circuit wasn't working and the 0.39Ω feed resistor RP14 to the line output stage was open-circuit. The obvious conclusion to draw was that the line output transistor was short-circuit, and indeed an in-circuit check showed a very low resistance across all its pins. The transistor itself was o.k. however, the cause of the fault being an internal short from pin 8 of the line output transformer to chassis. A new transformer restored the set to working order. **N.B.**

Salora 21/25/28M87 Series

This set (the 25in. version) was on soak test prior to delivery. We still take this precaution despite the wonderful reliability of modern sets. At some stage I happened to pass the set and noticed that the grey-scale looked even worse than usual with these models. It was decidedly purple. I entered the password and zipped through the menu until I reached the black-level adjustments. Adjustment is made with the volume + and - keys, but it didn't work. A new CCU (CCU-SALO-7 in this case) cured the problem.

The grey-scale was now better and while watching the picture a particularly nubile young lady appeared on the screen. I turned up the sound to hear what was going on – only to be greeted with severely distorted, low-level sound from both speakers. So it was over to the bench with the set. The path of the audio is first as SIF from the i.f. can to the detector in the audio module, then into the ADC ICB101 (type ADC2301E) at pins 4 and 5 where in this case it was undistorted. From here PDM1/2 talk to the APU ICB102 (type APU2470S) whose analogue outputs at pins 22 and 23 were severely distorted. Theoretically any of these four chips could have been at fault, but I suspected the APU (audio processing unit of course) and a burst of freezer applied to it seemed to prove the point. A replacement confirmed that the diagnosis was correct.

It's strange that despite all the advances in audio circuit design the evergreen TBA120 is still used and we still employ a can of freezer for fault-finding! N.B.

Hitachi CPT2074 (NP83CQ Chassis)

The fault was very intermittent field jitter, or tiny height variations. No amount of probing or jarring would produce the symptom and the intervals between happenings could be so long, and their duration so short, that both measurement and observation were out of the question. Heat and cooling had no effect. I replaced the field output chip and some likely associated components to no avail.

The set I'd lent the owner then failed, so the Hitachi

was demanded back pronto. An answer had to be found there and then! One thing I'd noticed was that the line scream changed pitch when the field fell about. So I now let intuition take over from thought and research (intuition = experience plus inspiration divided by two). Older Hitachi sets sometimes had field trouble due to a couple of tantalum capacitors. I therefore replaced C603 (1 μ F, 16V), which is associated with the field oscillator, and let the Hitachi loose again. There's been no trouble since, but please remember this set in your prayers! P.R.

Sanyo CTP3246 (80P Chassis)

This set was dead with the chopper transistor short-circuit and the mains fuse open-circuit. Replacing these items and the $470k\Omega$ resistor that biases the base of the chopper transistor didn't produce the expected results. A raster of sorts appeared, but the height and width were much reduced and there was much squealing from the discomforted power supply. As expected, the h.t. was low. There were no shorts and no overheating however. A scope check on the drive to the chopper transistor produced a waveform that looked more like a burst signal. The penny then dropped. We next used the scope to check across the $100\mu F$, 400V main reservoir capacitor. The result was a display with masses of nasty ripple. Fitting a replacement put matters right.

Binatone Portable CTV

The design of this set showed a remarkable resemblance to many Amstrad receivers. The 5.6Ω , 5W resistor and the mains fuse were both open-circuit. After replacing these items we checked for shorts across the output rail and found that the so-called "avalanche" protection diode was faulty. This was removed and the set was powered up via a variac to check the regulation. There wasn't any – the output rose and rose past the correct 103V. Good results were obtained when a new STR50103 chip and protection diode were fitted.

Hitachi CPT1556

A dead set with the characteristic squealing usually indicates a loaded power supply. In this case the efficiency diode DN08 (BY228) in the line output stage was short-circuit.

S.L.

Hitachi CPT2174 (G6P Chassis)

This set was dead with a squealing power supply and a short-circuit reading across the line output transistor. On this occasion the line output transformer was the cause.

S.L.

Hitachi G8Q Chassis (FST)

There was no sound or raster but the power supply was quiet and provided the normal output. We found that there was no 12V supply as the 12V regulator was open-circuit.

S.L.

Alba CTV14

We've had various faults on these portables due to print cracks on the front panel — they seem to be very vulnerable to this, particularly at the top left side near the 5V regulator. Symptoms have included no tuning, no sound, full sound, dead set etc.

S.L.

Servicing Compact Disc Players

Part 9 Joe Cieszynski

In part 5 we saw how the analogue audio information is converted into a stream of 16-bit binary words known as samples. These samples emerge from the decoder in serial form, at a rate of 44,100 per second, alternating between left and right audio information. This month we'll consider how the binary data is converted back into an analogue signal and how the left and right audio signals are separated. We'll also take a look at the filters used to remove the 44·1kHz sampling component and the reasons why the majority of players employ oversampling.

Digital-to-analogue Conversion

When the signal reaches the digital-to-analogue (DA) converter the original 16-bit L/R samples have been recovered and error corrected as necessary. Each sample must now be converted back into an instantaneous voltage equivalent to the corresponding voltage fed to the analogue-to-digital converter during the recording process. The easiest way of understanding DA conversion is to consider the basic weighted-current converter shown in Fig. 1.

Switches S1-8 close when logic ones occur. When an 8-bit word (parallel data) is applied to the data input, a combination of switches will close depending on the number and position of ones in the 8-bit word. As a result, a current Isum flows in the summing circuit. This current value is then stored as a voltage in a sample-and-hold circuit. When the next 8-bit word arrives the switches will toggle accordingly and a new value of Isum will be obtained. You can see from the resistor values that each is twice the value of the previous one, so the current must be exactly half that in the previous leg. This arrangement makes it possible to obtain 256 different values of Isum, each increment being of identical value.

This theory is fine, but in a CD player the samples to be converted consist of sixteen bits. Unfortunately the number of inputs to this type of circuit is limited by the gain of the amplifier. Sixteen inputs would not be possible because the amplifier would saturate with high-value samples. To overcome this problem we can use two converters as shown in Fig. 2, one converter handling the first eight bits of the sample and the other one the second set of eight bits. This second converter provides Isum values that are 256 times lower. This gives us the 65,536 increments required to recover the audio signal from the compact disc faithfully. The two latches are used to convert the incoming serial data to 8-bit parallel form.

The summed outputs from this arrangement are fed to a sample-and-hold circuit that stores each sample until the next one arrives. In a CD player the sample rate is 44·1kHz, so the sample-and-hold output changes at this rate. If an oscilloscope is connected to the sample-and-hold output while the player is reproducing a pure sinusoidal note you will be able to observe the reconstituted sinewave which, for want of a better description, I call a stepped sinewave (even though this is a mathematical impossibility!).

To help in understanding the operation of the circuit shown in Fig. 1, Table 1 shows the outputs for a set of 8-bit binary inputs. You will see from this that each single increment in the binary count produces a 4mV voltage step. On this basis the waveform shown in Fig. 3 has been plotted. This is how the audio would appear on an oscilloscope, except that the steps would be smaller and of much greater number (a CD player uses 65,536 levels while the circuit shown in Fig. 1 has only 256).

There are in practice many types of DA converter, each with their advantages and disadvantages. The arrangement shown in Fig. 1 is very simple and is useful for putting over the principles of DA conversion. It would not however be used for converting audio or video information because it's difficult and expensive to manufacture. The reason for this lies in the values of the input resistors. These are not only awkward (e.g. if R8 is $100 \mathrm{k}\Omega$ then R1 must be $781 \cdot 25\Omega$) but must be made to within very close tolerances otherwise the output steps won't be equal, resulting in serious distortion of the recovered signal.

The Integrating DA Converter

The integrating or ramp counter DA converter is the type normally used in CD players. The principle here is to charge a capacitor at a constant rate for a period determined by the 16-bit data word. See Fig. 4.

Capacitor C is charged by the constant-current sources Io and io when the current switches are closed. The current held by the capacitor is thus Io + io. The 16-bit data words are loaded into two 8-bit counters. Thus each counter is given a binary value. The current switches

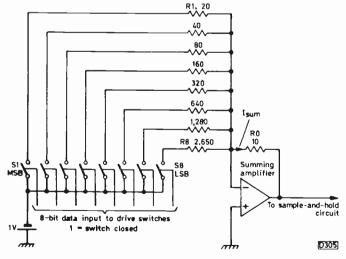


Fig. 1: Simple 8-bit weighted-current DA converter circuit. The output voltage depends on the value of Isum, which in turn depends on the number of switches that close when an 8-bit word is applied to the input. For example, Isum is $391\mu\text{A}$ with the input word 00000001 and 50mA with the input word 10000000. Remember that the most significant bit (MSB) is the digit on the left, controlling S1. The least significant bit (LSB) is the one on the right. In a practical circuit R8 would be about $100k\Omega$, making R1 781.25Ω .

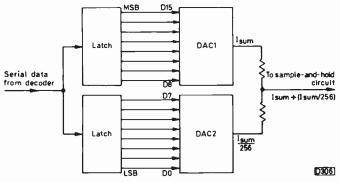


Fig. 2: Method of connecting two 8-bit DA converters to give a total (sum) output: with 16 inputs there are 65,536 possible output levels.

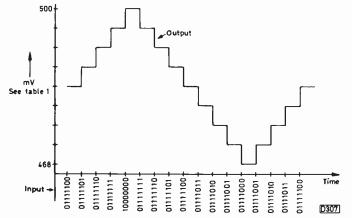


Fig. 3: How a DA converter and sample-and-hold system produce a "stepped sinewave".

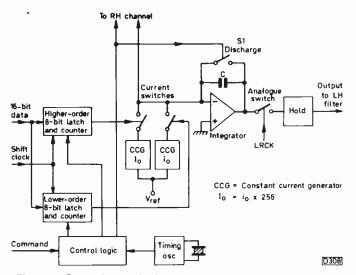


Fig. 4: Operating principle of an integrating type DA converter.

close immediately after the counters have been loaded and the counters then begin to count down to zero at a constant rate which is determined by the timing oscillator. When each counter reaches zero the corresponding current switch is opened: when both counters are at zero the charge held by the capacitor will be equal to the original audio sample present during AD conversion. The capacitor's potential is fed to a hold circuit. Electronic switch S1 discharges the integrating capacitor between each sample.

The reason for using two 8-bit counters instead of one 16-bit counter is that the clock frequency would be too high. By counting down the two halves of the word

Table 1: DA conversion with a weighted-current converter.

| age |
|-----|
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |

For the converter shown in Fig. 1 the output voltage is calculated using the formula $Vout = Vin \times (R0/Rin)$.

simultaneously and summing the currents the same result can be obtained at half the clock frequency. Notice that the value of the current Io is 256 times that of io in order to obtain the required 65,536 increments.

Practical arrangements use two integrating capacitors, one for each of the stereo channels. Each is charged in turn from a constant-current source. The left and right samples are then fed alternately to the relevant hold circuits via analogue switches. These are toggled by the LRCK (left/right clock) signal which is derived from the PLL oscillator in the main decoder.

Fig. 5 shows a simplified block diagram of a practical example, the Sony CX20017 DA converter chip. Separate left/right charging currents for the integrating capacitors are fed out at pins 17 and 18. Pins 15 and 23 control the discharge switches. The block labelled "clock buffer" is a crystal oscillator that controls the counting. Pin 7 receives the LRCK signal from the decoder. It passes through a D-type flip-flop before going on to the analogue switches in the sample-and-hold chip. The purpose of this flip-flop is to remove from the LRCK signal any jitter that would otherwise cause conversion errors.

Most players use a single DA converter that has to alternate between left and right channel information. The disadvantage of this arrangement is that because the

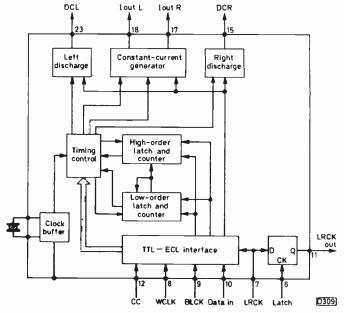


Fig. 5: Simplified block diagram of the Sony CX20017 DAC.

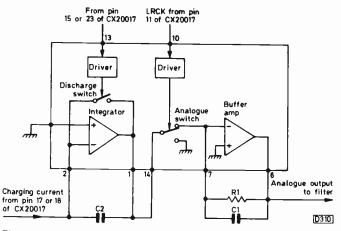


Fig. 6: The Sony M51008P chip incorporates an integrator to obtain the sample, an analogue switch and a store circuit where the sample level is held. Together, the integrator and hold system form a sample-and-hold arrangement.

signals are being processed alternately there's a time difference between the left and right audio signals. This difference is about $11\cdot3\mu\mathrm{sec}$, which results in a phase shift of 82° at 20kHz. Most manufacturers don't consider this to be a problem, but you do occasionally come across a player that uses two DA converters, one for each channel, enabling both signals to emerge simultaneously. This luxury is generally reserved for top of the range players.

Hold Circuit

Because the integrating capacitor is being constantly charged and discharged, each sample must be stored until the next one arrives. Storage is done by a hold circuit, the integrator and hold arrangement together forming what has come to be known as a sample-and-hold circuit. Fig. 6 shows a simplified block diagram of an integrator (sampler), analogue switch and hold system, based on the Sony M51008P chip which complements the CX20017. A CD player employs two of these chips, one for each channel. The charging current for the integration circuit is applied to pin 2, which is one input of an operational amplifier used, in conjunction with the external capacitor C2, as an integrator. At the same instant that the charging current ceases the analogue

switch operates, connecting the sample stored in C2 to the hold circuit connected between pins 6 and 7. The time-constant of C1 and R1 is short, enabling the circuit to respond rapidly to the next sample level when it arrives. This ensures sharp rise and fall times in the stepped output waveform. The operation of the circuit is outlined in the timing diagram shown in Fig. 7.

Fault Finding

Problems in the DA converter and hold section of the circuit are uncommon. When they do occur they are not too difficult to pin down. The symptom will depend on the part of the circuit that's failed, but here are some guidelines.

In the event of distorted sound in one channel, if possible play back a test disc with a single audio tone and scope the signal from the preamplifier back through the filter to the output of the hold amplifier. If you've had no luck up to this point, scope the charging current, e.g. at pins 17/18 of the arrangement shown in Fig. 5, and compare the conditions in the two channels. If this current waveform is distorted, suspect the converter chip. We found the CX20017 chip to be the cause of the trouble in one player that displayed this symptom.

Distorted sound on both channels is unlikely to be due to the sample-and-hold system unless both are in the same chip. The most probable causes of this trouble are the DA converter, the RAM or the RAM address. Scope the RAM address lines to ensure that one has not failed. Scope the data entering the converter: if this is a clear waveform, suspect the converter – you may have to locate the cause of this fault by component substitution. Don't be tempted to go for the decoder chip unless you are desperate – when faulty this chip usually gives no sound and often results in disc speed problems.

No sound on either channel is perhaps the most common symptom with CD players. If the disc speed is correct and you've gone through the usual servo adjustments (which we've not yet covered in this series), check the data entering the DA converter. But beware: in the fault condition it's often possible to pick up clock pulses at this point and to mistake these for data. As a general guide, clock pulses appear as a stable waveform whilst a data stream appears "fuzzy".

Before you get too involved, do remember to check

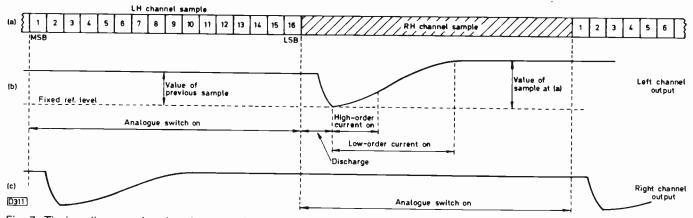


Fig. 7: Timing diagram showing the operation of the circuits shown in Figs. 5 and 6. A 16-bit input word is latched into the counters, the eight most significant bits followed by the eight least significant bits. If the current waveform shown at (b) is taken to be the left-hand signal, then during this period the right-hand integrator will be charging. Soon after the last bit has been latched in, the analogue switch opens and the discharge switch closes to remove the previous sample. When the discharge has taken place the counters begin their count down to zero. During this time the integrating capacitor recharges. The analogue switch closes again immediately after the last right-hand bit has been latched in, and the cycle repeats.

the power supply rails. CD players are full of those notorious circuit protectors that seem to keep many service engineers in business today.

Filtering

The final step in the recovery of the audio signal is to pass the coarse output from the sample-and-hold system through an analogue filter. If we analyse the signal shown in Fig. 3 we see that it contains the fundamental audio signal plus 44·1kHz sampling components (in simple English, steps). The frequency spectrum of this waveform is shown in Fig. 8. From this it's clear that if all the sampling components are to be removed the filter must have a sharp roll-off at 20kHz. Early players used such filters, which have become known as brick-wall filters, but unfortunately the result is that signal components above 15kHz suffer severe phase distortion that detracts from the high performance expected of a digital audio system.

Oversampling

The solution is to use a digital filtering technique known as oversampling. The idea is to make the task of the analogue filter simpler by moving the sampling components away from the audio range, see Fig. 9.

Oversampling takes place before DA conversion, i.e. in the digital part of the system. It's easier to explain the principle by looking at the analogue signal that emerges from the sample-and-hold circuit however.

Fig. 10 compares the effect of basic sampling at 44·1kHz and four times oversampling at 176·4kHz. For each sample at 44·1kHz there are four levels at 176·4kHz. But how, you may ask, is it possible to have a sample rate of 176·4kHz when the rate of the data coming from the disc is 44·1kHz? The technique used is interpolation, in a similar manner to the way in which large data dropouts are covered in the error correction process (see Part 6). The original samples are used to calculate new intermediate sample levels. From Fig. 10 you can envisage how this is accomplished. But let me re-emphasise that this process is carried out before DA conversion and is really a mathematical calculation based on the 16-bit binary words that make up the L/R audio samples.

Those familiar with CD players from different manufacturers will know that some use ×2 oversampling, some use $\times 4$ while a few use $\times 8$. Is there any difference? Most people agree that under normal listening conditions ×2 oversampling gives a marked improvement in comparison to the results obtained from a player that doesn't use any oversampling. Fewer people can discern between the performance achieved with ×2 and ×4 oversampling - personally I think that I can just about discern some difference. I have never had the opportunity to hear a player with ×8 oversampling, but those who have assure me that they cannot tell the difference between this and ×4 oversampling. Perhaps I should mention that those I refer to are service engineers rather than hi-fi connoisseurs, who might perhaps tell us a different story. In practice most manufacturers seem to be adopting ×4 oversampling.

From the spectrum shown in Fig. 9 you may wonder why there's any improvement at all between ×2 oversampling and higher oversampling rates. Look again at Fig. 10 however and consider the action of a passive

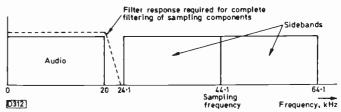


Fig. 8: Frequency spectrum of the audio and a 44·1kHz sampling signal. With a 20Hz-20kHz audio range the analogue filter must have a completely flat response up to 20kHz and then fall off before 24kHz. This calls for a roll-off of -80dB/octave.

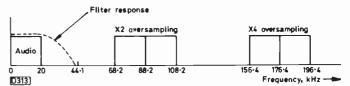


Fig. 9: Frequency spectrum for two times (88·2kHz) and four times (176·4kHz) oversampling. By moving the sampling signal components away from the audio signal, the analogue filter's roll-off does not have to be so severe. The problem of phase distortion at around 20kHz is thus overcome.

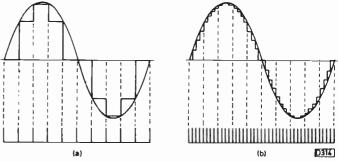


Fig. 10: Sample-and-hold outputs obtained with a sampling rate of 44·1kHz (a) and 176·4kHz (b).

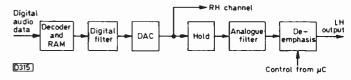


Fig. 11: Block diagram showing the signal path in a player that employs a digital filter.

filter on both the waveforms. Clearly the more steps there are the better the integrated output from the filter will be, but as I've said sampling rates above 176·4kHz do not seem to provide any subjective improvement as far as the average listener is concerned.

To complete the picture of oversampling, Fig. 11 shows in block diagram form the area of a CD player that employs digital filtering.

Fourteen-bit Converters

Engineers familiar with earlier Philips CD players will know that many models employed 14-bit instead of 16-bit DA converters. Since all discs carry 16-bit sample words, how did this work? The problem was that many of the early 16-bit converters were not as accurate as they should have been theoretically. They would often incorrectly translate the two least significant bits. In view of this Philips chose to ignore the last two bits in each word. Despite this the company claimed that the resolution of its DA converter was better than that of

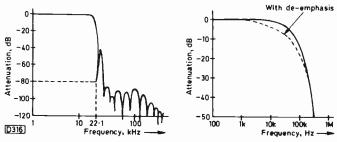


Fig. 12 (left): Response of a "brick wall" filter. The output falls by 80dB between 20kHz and 22kHz.

Fig. 13 (right): Frequency response of a filter for use in a player that employs four times oversampling.

rival 16-bit versions, because the errors introduced by 16-bit converters were random.

In theory, ignoring the last two bits of each sample would worsen the signal-to-noise ratio by 12dB. Philips overcame this by introducing four times oversampling plus a technique of cancelling out the error introduced by the omission of the two bits by feeding the error back in antiphase. What it mounted to was a claim that Philips' 14-bit converter with oversampling produced a marginally better signal-to-noise ratio than that of a 16-bit converter without oversampling. At the time it was not easy to introduce oversampling with 16-bit converters because of their faster speed of operation. Eventually of course the inevitable happened: players were produced with 16-bit converters and oversampling. In practice this is all rather academic considering that the signal-to-noise ratio is around 96dB.

Analogue Filters

The ultimate sound quality produced by a particular CD player depends very much on the analogue filter used. If this cannot remove the sampling components

completely, i.e. the steps in the waveform, or if it introduces severe phase distortion, the sound quality will be impaired.

Most players without oversampling use a filter that consists of a passive integrator followed by an active, frequency-selective filter. With this arrangement the cut-off point is determined primarily by the time-constant of the passive filter. Fig. 12 shows the response of one of these filters.

As we've seen, when oversampling is employed the need for such severe filtering is removed and the roll-off can be much more gentle. Fig. 13 shows the response of a Philips Bessel filter used in a player with four times oversampling. It introduces 50dB of attenuation at 156·4kHz: this frequency is 176·4 – 20kHz, the lowest sample component in the spectrum (see Fig. 9).

More upmarket players have a switched de-emphasis network in the vicinity of the analogue filter. In Part 7 of this series we mentioned that the Q subcode data contains information to tell the control microcomputer whether the disc being played has pre-emphasis. In such a player the microcomputer chip will operate switches in the audio stages to control the 50µsec time-constant deemphasis networks. These introduce a 6dB/octave attenuation at frequencies in the range 3·2-10·6kHz.

Because the filter has such a great bearing on the final sound quality, manufacturers have produced many circuit designs. From the point of view of the service engineer however one is very much the same as another. The filters are usually contained in a sealed module, making them very reliable. Should you ever have to replace one, be careful that it's of the correct type otherwise you could end up with a mismatch in the sound from the left and right channels.

We have now covered all the signal processing sections of the CD player. In the next instalment we'll begin to look at what is perhaps the most troublesome area in CD players, the servos.

Servicing Aids

Nick Beer

We've recently bought a couple of very useful servicing aids from RS Components. They are probably targetted at the telecoms and computer engineering markets – RS is more and more moving away from our end of things – but we have nevertheless found them to be helpful in our domestic consumer electronics servicing activities.

The first is an anti-static kit for field servicing. It's a portable version of the kit that we built into our workshop anti-static station some time back – see *Television* December 1988 – enabling static-sensitive devices to be replaced safely in the field. We decided to try it since the workshop unit had been so successful. The amount of outside work that involves static-sensitive devices is ever increasing. The tendency would have been for such work to be brought into the workshop, but our aim is to avoid this if possible. In addition to repairs a certain amount of upgrading work is involved – for example microcomputer chips in certain Bang and Olufsen units have to be changed when a system is expanded. We find it more efficient to do as much work as possible in the field.

An alternative or extra use for the kit, particularly if

you don't have a workshop anti-static facility, is for onbench use. It's a help when you have a heavy unit that's not easy to transport to the anti-static station, or when the equipment being serviced has been dismantled into many parts that are only loosely connected.

The mat is in the form of a large tool roll with coiled leads that connect the mat to the engineer's wrist and a suitable earth. These leads are bright yellow, contrasting with the black colour of the main side of the mat. I say main side because there are pockets, as with a tool roll, in which to store components etc. The other side is bright blue. While the black side is volume conductive (surface resistivity $10^5\Omega/\text{sq.}$) the blue side is static dissipative (surface resistivity $10^8\Omega/\text{sq.}$).

It's a well made kit that serves its purpose well. As with a tool roll it can be rolled up and is thus easy to transport and store. With savings in labour and damaged components it should recoup the initial cost in no time. Remember that static damage does not always lead to immediate component failure – the damage can lead to failure of the device days, weeks or even months later. Always treat with care any device about which you are uncertain. For example, do you take anti-static precautions when replacing the optical units in compact disc players? You can't be too careful.

The trade price of the kit, order code 552-911, is £42.53 plus VAT – there's a discount for more than nine! Spare

leads and wrist straps are available. The workshop kit for bench fitting is available at £82.41 trade plus VAT under order code 550-022.

Introduced with the latest RS catalogue (July-October) is a surface mount development kit. This is aimed at designers and testers working on pre-production and prototype PCBs that use surface-mounted devices. It contains items – also available separately – that are very useful to us when repairing assemblies with surface-mounted components.

The kit is available under order code 567-840 at a trade price of £39.40 plus VAT (discount on five or more) and may be worth considering for the larger workshop. Individual items worth having if you service units with surface-mounted components are solder cream (syringe)

551-693, surface-mount adhesive 567-581 and a rework solder flux aerosol 567-597. The latter is useful for replenishing solder braid that has lost its powdered flux, making it highly efficient again, as well as for its uses with SM components. The kit also contains solder braid, lint-free wipes etc., a low-residue solder (567-531), aerosol solvent cleaner (567-660) and aerosol modified silicone conformal coating (567-682). The latter is a protective coating for PCBs' offering many properties not really essential for domestic equipment but vital for defence and aeronautical applications. I remain in favour of solder cream over traditional solder for soldering many-legged devices, but care is required in its application to prevent short-circuits.

RS Components Ltd., PO Box 99, Corby, Northants NN17 9RS. Telephone 0536 201 234.

Dealing in Second-hand VCRs

Malcolm Burrell

From an early age an old friend of mine used to poach my spares and knowledge. By sheer patience and hard graft he'd make almost anything work. I was horrified however when he diversified into video. My advice to anyone who is thinking about entering this trade, and in particular the regular sale of second-hand consumer electronics products, is simple: don't! There are however those diehards who simply won't be put off.

Since VCRs have been popular for ten years or so an inevitable surplus has built up. The warehouses have lots of them. In order to make a profit out of reselling them you must give a little thought to the potential market. Right now, with rising interest rates, there are plenty of people thinking seriously about buying a reliable secondhand machine. Most people aren't interested in making their own programmes. They just want to spend Saturday evening watching the fare from the local video shop or recording the late night film for viewing next day. Remote control and freeze frame are nice little extras to have, but the trimmings like insert edit and even stereo sound are seldom necessary. It's best therefore to concentrate on basic machines. If they are well serviced and presented they'll seldom reappear in your workshop. This is easier to achieve if you specialise in one or two models.

All stock faults should be corrected on a flow-line basis. Don't wait for them to occur. You'll inevitably find that you've the odd rogue machine on your hands. Put it aside. It will be of use for difficult or obsolete items and will provide an invaluable source of replacements for missing or damaged knobs and trim – even the cabinet itself. It will also assist by enabling you to localise elusive faults by temporarily swapping over panels.

It's important to have a first class aerial input signal available. Loose plugs and jointed leads can result in surprising losses and patterning. Remember that patterning is often the result of beating between the VCR modulator's output and that from a local transmitter. Find the best channel to use in your area, then tune your workshop monitor to it. Channel 36 is usually, but not always, best. Subsequently tune all incoming VCRs to the monitor, but tell customers to tune their receivers to the VCRs. With this procedure local installations at least will usually be free of complaints about off-air viewing.

It's a good idea to become known at your local warehouse(s). Staff are unlikely to be dishonest with a regular customer. Keep a known good test card recording

for test purposes, and use part of the tape for making test recordings. When inspecting a machine, check all functions such as fast forward and rewind. If possible remove the top cover and inspect the interior. A nice thin layer of undisturbed dust is a good sign. Solder blobs and unplugged connectors are bad ones. Odd or missing screws could indicate a chequered history. Is the cabinet clean and unblemished?

If you decide against purchase, replace the cover and all the screws. Don't pilfer! Mutual trust is the key to a good relationship with your supplier.

Buying "off the pile" usually means purchasing a non-worker. Inspect as carefully as you can. We've all seen the backroom graveyards of obsolete and uneconomical to repair machines. No rental company is going to give away its assets. A warehouse will soon complain however if the majority of the goods it receives are substandard, though a degree of wastage is accepted with bulk deals.

Essential peripherals such as r.f. leads and mains connectors will often be missing. While trade prices can be reasonable it's often cheaper to make up your own. The VCRs you sell should be ready for instant use.

We all know that a clean car sells more easily than one that looks as if it has been neglected. In the same way an additional polish improves the saleability of a VCR. Certain types of control benefit from a scrub in soapy water followed by a final clean with metal polish. Plastic fascias are often of a colour different from that of the base material. They tend to become worn around frequently used controls. If you have several machines you could remove the fascias and spray them with silver or bronze enamel, then apply dry-print lettering or symbols to replace lost indications. With large quantities it might be an idea to discuss with a local screen printer the cost of producing an artwork and screen for the job. You could even include your own logo.

It's best to remove all rental identification labels – some of your customers may have had an unhappy association with a particular company.

Your price will have to reflect any guarantee given. Try to avoid giving an extended guarantee – it can amount to selling your soul! – but at least agree to free maintenance for a reasonable period. Also try to avoid terminology such as "reconditioned" or "engineered" which could lead to argument. Simply concentrate on building customer confidence and providing value for money.

VCR Clinic

Grundig VS200

The symptoms with this machine were as follows: no E-E or record sound, a rolling picture with its own recordings, and the search tuning didn't stop when a station was found. I couldn't see how there could be a common cause for these varied symptoms and therefore decided to check the ribbon cable connectors to the sequence control module. The contacts were o.k. but someone had fitted plug CP1 on back-to-front. Yes, the phantom fiddler had struck again!

For problems such as loss of tuning information or cannot memorise the clock or date check the CMOS battery on the tuning board. It can go open- or short-circuit. When it's short-circuit you can't store information even when the machine is powered up.

P.B.

Mitsubishi B10/B20

We've had the following fault experiences with these machines.

- (1) Failure of R9B5 (5.6Ω) on the control PCB, connected to connector CN. This results in no standby 5V supply and shut down of all functions including the clock display. The cause can be a short-circuit on the sensor panel. Although sufficient clearance is provided for board fixing, the 5V is close to one particular screw that has been known to short this rail to chassis. A fibre washer to provide insulation is all that's needed.
- (2) No blue screen with the E-E and playback video level approximately 10dB down can be caused by a dry-joint on L5A0, adjacent to IC5A2.
- (3) No blue screen has also been caused by an inactive 17-7MHz crystal X5A0.
- (4) Complete loss of video has been traced to breakdown of O5B4.

All these faults have been on the control PCB. A.F.

Grundig VS180

Total picture dropout at the top of the screen clearly indicated that there was a tape-path problem at the entry point to the drum – bear in mind that his model uses the Beta format U-wrap. Scoping the f.m. waveform confirmed this diagnosis. The fault cleared when slight pressure was applied to the tape at the entry point.

The entry height and angle are set by two guide poles that are located on either side of the full erase head. They were still tightly secured by the original locking paint. Having cleaned everything to no avail I inspected the entry guide poles closely and noticed very slight wear on the one closest to the drum. The pole consists of a collar placed over a fixed pillar and secured. Removing the collar and turning the worn side away from the tape cured the fault, though I must add that realignment of the entry poles called for some patience.

J.C.

Panasonic NV-FS1

The tuning on all channels would drift after several hours' use. When we'd removed the complete main circuit board assembly to make measurements around the tuner's BT supply circuit we were faced with what

Reports from Philip Blundell, Eng. Tech., A. Farnborough, Joe Cieszynski, Ian Bowden, Nick Beer, Stephen Leatherbarrow, Alfred Damp and William C. Lockitt

appeared to be a different fault: there was no or very weak vision in the E-E mode. A check on the buffer transistor Q703 at the output of the TV demodulator CBA showed that it was reverse biased – its emitter voltage was slightly higher than that at its base. As the collector resistor of this emitter-follower is only 1800 you'd expect the value of the emitter load resistor to be fairly low. In fact the reading was about $200 \mathrm{k}\Omega$. No emitter resistor is shown on this page of the manual (3-94/5/6) so we had to trace the route the "video out" takes.

From the TV demodulator block CBA it passes through the sub-nicam decoder section (and the 12Ω resistor R792) then through the TV demodulator interface CBA to the channel select area, from there to the luminance/chrominance area and on to the input select section. It's here that the two series 75Ω emitter resistors R3906 and R3909 are mounted. They go to a connection marked "GND (TUNER, VIDEO)" which is pin 2 of the pack connection to the main circuit board. In fact this ground is actually a black lead which isn't connected to the main CBA ground but ends in an eyelet. This should be connected to a chassis point on the TV demodulator interface CBA but is disconnected when you remove the screw that attaches it to ground as this also holds the CBA. With the eyelet soldered to the board we were back with the original fault.

When the tuning drifted, there was a slight change in the tuning voltage BT. This is produced by the channel select pack from the digital DAC signal that comes from the tuning/timer chip IC7501. We noticed at once that the BT voltage at the tuner was about 2V lower than that at pin 8 (BT output) of IC7551. The drop was across a series $10k\Omega$ resistor R7555, one end of which is connected to pin 8 of the chip and the other via a $1k\Omega$ resistor to the output from the pack (connection 8). An 0.01μ F decoupling capacitor (C7555) is connected from the output end of R7555 to chassis. It was leaky – around $120k\Omega$ – and it was this that caused the drifting.

B and O VCR60/70

These machines sometimes switch to the still mode during play or picture search, with noise bars on the frame. The cause is failure of the cassette switch (part 210).

B and O VHS65/90

If one of these machines suffers from poor remote control sensitivity, connect an $0.001\mu\text{F}$ capacitor between the collector and emitter of Q924. **N.B.**

Panasonic NV-G25

Premature failure of the heads is common enough with these machines and I didn't doubt for a moment that this was the cause of intermittent loss of the output from one of the heads on record or playback. When the drum was removed however the true cause became apparent – broken leads on the connection pins to the rotary transformer. We've had this on more than one occasion.

Another of these machines would accept a cassette,

thread it to the half-laced position as normally but would then unload and eject the cassette. The green cassette-in light never came on. The cause of the trouble was a faulty cassette insert switch – it's a slide switch on the side of the carriage. **N.B.**

Panasonic NV-G40

The problem was with the digital bar scanner for programming the timer. An LCD screen gives confirmation of the information read. When the information was read in the usual order the display would go dim and many of the previously lit segments would go out as soon as the date was reached. If programming was done out of order, with the date selected last, everything was o.k. The cause of the fault was soon traced to two pins on the LCD panel being bridged with solder.

N.B.

Hitachi VT410

This machine would unload and shut down almost immediately after the load sequence had been completed. It seemed logical to start by checking the flip-flop signal to the microcomputer chip. Careful observation of the screen during the very brief period of time when this signal was visible gave a further clue. Lines on the screen indicated incorrect drum speed. Replacing the lower drum cured the fault.

S.L.

Ferguson FV11/FV20 etc

These machines have a similar signal processing circuit though there are some differences of course. No play-back picture and weak or no luminance in the E-E mode, with the sound o.k., should lead to a check on the signals at LPF702. It's becoming common for this filter to distort the incoming signal badly. I've had the fault three times in three weeks, though I don't see a lot of this equipment.

S.L.

Sanyo VHR3000

Absence of signals was traced to the scan/memory can. A 12V supply for the tuner is produced within this can. One of the chips in the can produces a switching signal via a couple of transistors and this wasn't happening. We decided to replace the can as a whole to be sure – the customer was one of those difficult ones!

S.L.

JVC HRD320/HRD700

It's becoming increasingly common to find one of these machines dead with a faulty STK5481 power supply chip. You may or may not find one or more of the CPs that protect the supply lines open-circuit.

S.L.

Amstrad 4600/4700/TVR3

If the machine shuts down after a couple of seconds suspect no counter operation. The reason of course is no reel pulses, usually due to the reel sensor. Check at pin 21 of the syscon chip (type varies) for the tell-tale squarewave. If this is present the syscon chip is almost certainly faulty, but check the amplitude of the squarewave. If the squarewave is missing the causes, in order of likelihood, are the reel sensor, HIC401 and the capacitor that couples the signal to the syscon chip.

The drum - the lower one in particular - is often the

cause of poor pictures, low f.m. on record, poor LP playback and variations of the f.m. due to phase/speed errors in the drum's rotation.

An unusual fault with a 4700/TVR3 was virtually no f.m. from one head when playing back a recording. The cause was eventually traced to the fact that 14DN210/300 produced a switching pulse with an unequal mark-space ratio.

No chroma is always HIC101. Poor or no luminance is usually HIC201.

S.L.

JVC HRD230

The fault was intermittent field roll when any tape it had recorded was played back by this machine. It was o.k. in the E-E mode. The f.m. waveform was checked first. This cleared the drum input and output guides of any blame. Attention was then turned to the video processing chip IC101. The output at pin 24 was correct. It's fed back to pin 5 where the field sync pulses were found to be crushed. The culprit was the coupling capacitor C134 $(2\cdot2\mu\text{F}, 50\text{V})$.

Ferguson 3V24/JVC HR2200

If this machine was switched on and then left in the stop mode it would, after about five seconds, go into the alarm mode. If it was switched on and play was immediately selected the machine would work correctly until stop was selected. Then, again after about five seconds, it would go into the alarm mode. Intermittent alarm faults on these machines are usually caused by dry-joints on the front mechacon board. Before attacking this however it's as well to check the operation of the leaf switches under the deck. These are the pinch, brake, after-loading and unloading switches. In this particular case the pinch switch had lost its springyness and stayed closed in the stop position, thus invoking the alarm mode. An inspection of the mechacon board revealed that there were several suspect looking joints here. The best way of dealing with this is to carry out blanket resoldering on both sides of the board.

Sanyo VTC5000

This machine would load when a cassette was inserted. It would then start to play. After about five seconds it would stop, with the tape fully loaded. The only function that then worked was stop. The tape could then be unloaded. Our main problem was that this fault was very intermittent. We had to spend a lot of time trying to instigate it.

Attention was centred on the system control circuit. We found that when the fault was present there was no waveform at pin 39 of IC3001. The input waveform at pin 2 of S3003 was correct and the culprit turned out to be Q3012.

W.G.L.

Ferguson 3V36/JVC HRD225

This machine produced a picture that looked as though the line hold was off frequency. You could see that the head drum was revolving too fast. After a few seconds the tape stopped and unloaded.

Our first check was on the drum FG pulses at pin 4 of IC404. The waveform here and also at pins 6 and 11 was correct. Moving on to IC406 we found that the voltages at pins 15 and 13 varied while there was zero voltage at pin 14. The 12V zener diode D412 was short-circuit. W.G.L.

| E | <u>Ol</u> | VO | MI. | GD | E | /IC | ES | PO | B | OX | 1 | 5, W | 10 | LVE | \mathbf{R} | HAI | VI | PTO | N | . W | /2 | 44 | Z |
|---|--------------------------------------|--|--------------------------------------|--|--------------------------------------|--|--------------------------------------|---|--------------------------------------|---|---|--|--------------------------------------|--|--------------------------------------|--|--------------------------------|--|-------------------------------|--|-------------------------------|---|---------------------------------|
| 15/80H 15/85R 17052 17053 | 2.72 3.28 5.61 5.61 | 2SC1678 2SC1741 2SC1810 2SC1815 | 1.92 1.25 1.70 0.20 | AN2140 AN234 AN236 AN240P | 2.40 5.09 3.33 0.99 | BC207 BC212B BC213L BC214 | 0.14 0.26 0.10 0.10 | BDX54B BDX62A BDX63A BDY20 | 0.31 1.96 1.96 1.21 | BU126 BU137 BU205 BU206 | 1.19 6.53 1.15 1.27 | HA1196 HA13001 HA1306 HA13402 | 7.43 1.73 2.26 7.87 | MC1330P MC1350P MC1351P MC1352P | 1.98 0.90 1.32 1.40 | SAS5601 SAS570T SAS570S SAS580 | 5.42 5.42 2.61 2.85 | STR1096 STR4090 STR440 | 4.98 9.52 5.37 | TBA970 TBA990 TCA270S | 2.15 | TDA4440 TDA4442 TDA4500 | 3.26 4.15 4.75 |
| 17074 17089 17127 | 9.30 3.45 2.50 | 2SC1826 2SC1829 2SC1875 | 0.67 2.25 4.50 | AN241 AN245 AN253 | 1,71 4,90 1,80 | BC225 BC237 BC238 | 0.40 0.10 0.10 | BDY81 BF115 BF117 | 1,18 0.29 0.66 | BU207 BU208 BU208/02 | 1.65 1.12 1.88 | HA13342 HA13365 HA1366WR | 2.65 4.02 1.38 | MC1357P MC1358P MC14493P | 2.15 1.48 4.20 | SAS6600 SAS660 SAS6700 | 1.33 1.33 1.33 | STR451 STR453 STR454 | 4.93 8.16 4.95 | TCA270SQ TCA29QA TCA42QA TCA440 | 1.05 2.39 2.16 2.25 | TDA4600-2 TDA4610 TDA4620 TDA5500 | 2.10 6.88 6.73 7.45 |
| 17376 1N4001 1N4002 1N4003 | 1.58 0.04 0.06 0.06 | 2SC1893 2SC1906 2SC1921 2SC1923 | 3.02 0.98 1.37 0.30 | AN260 AN272 AN295 AN301 | 3.85 7.92 5.52 2.45 | BC238B BC239B BC251A BC294 | 0.08 9.25 0.31 0.50 | BF118 BF121 BF123 BF127 | 0.67 0.25 0.13 0.13 | BU208A BU208D BU209 BU226 | 1.12 1.43 1.93 2.45 | HA1367 HA1368R HA1368 HA1370 | 2.75 2.45 2.07 3.71 | MC14494P MC14497 MC14510BAL MC14511BCP | 2.15 3.46 3.75 1.10 | SAS670 SAS6710 SBA750 SC84203 | 1.33 2.21 1.61 19.35 | STR6020 T6029V T6035V T6036 | 5.85 7.98 0.73 0.67 | TCA530 TCA640 TCA650 | 2.24 2.25 3.05 | TDA5700 TDA7270S TDA8190 | 2.75 2.25 3.96 |
| 1N4004 1N4005 1N4006 | 8.05 0.05 0.08 | 2SC1929 2SC1942 2SC1959 | 2.25 1.98 0.26 | AN302 AN305 AN315 | 3.09 8.88 2.46 | BC300 BC301 BC302 | 0.35 0.23 0.53 | BF137 BF153 BF154 | 0.29 0.58 0.26 | BU326A BU406 BU406D | 0.99 1.49 1.53 | HA1374 AA117 HA1377 | 1.80 9 1.75 | MC14528BCP MC1712 MC5192 | 2.15 3.88 19.50 | SC9504P SDA2006 SDA2112/2 | 1.95 17.95 10.29 | T6037 T6044V T6045 | 2.11 0.97 1.20 | TCA6608 TCA730 TCA750 TCA8000 | 2.60 3.81 2.25 5.95 | TDA9403 TDA9503 TDA9513 TDB1033 | 1.50 2.92 3.15 2.68 |
| 1N4007 1N4148 1N4448 1N5401 | 0.07 0.03 0.05 0.11 | 2SC1957 2SC1953 2SC1962 2SC1969 | 0.95 1.93 1.93 1.78 | AN316 AN318 AN320 AN321 | 5.53 9.35 5.47 2.25 | BC303 BC307A BC308A BC309 | 0.30 0.06 0.11 0.17 | BF157 BF158 BF159 BF160 | 0.33 0.18 0.18 0.31 | BU407 BU412 BU426A BU500 | 0.82 5.29 1.67 1.45 | HA1389R HA1389 HA1392 HA1394 | 2.05 2.39 1.38 2.37 | MC7724CP MCR106-5/6 MCR220/7 ME0411 | 3.49 1.23 2.28 0.75 | SG264A SG613 SG629 | 5.26 8.75 8.27 | T6049 T6052V T6058 T6059 | 1.45 0.87 3.08 | TCA830S TCA890 TCA900 | 2.38 5.44 2.04 | TDE1081 TEA1002 TEA1009 | 7.05 2.30 0.80 |
| 1N5402 1N5403 1N5404 | 0.13 0.18 0.15 | 2SC1983 2SC1985 2SC2009 | 3.28 1.55 0.34 | AN322 AN337 AN340P | 6.78 5.37 1.53 | BC317A BC327 BC328 | 0.13 0.33 0.11 | BF167 BF173 BF177 | 0.38 0.34 0.55 | BU508A BU536 BU608 | 1.89 1.65 1.65 | HA1397 HA1398 HA1406 | 3.76 2.95 2.07 | ME6002 ME6102 ME8001 | 0.26 0.28 0.34 | SG6533 SI1125H SI1630HD SKE2F1/04 | 7.50 20.50 1.39 | T9003V T9005V T9011V | 2.77 1.25 2.30 1.40 | TCA910 TCA940 TCA940E TD3F800R | 1.65 0.82 2.93 3.67 | TEA1014 TEA1020SP TIC106C TIC106M | 1.50 4.93 0.61 0.77 |
| 1N5408 1N914 1S1555 1S44 | 0.14 0.04 0.31 0.10 | 2SC2029 2SC2028 2SC2063 2SC2078 | 2.33 2.11 0.99 3.39 | AN355 AN362 AN370 AN5111 | 5.98 1.50 3.95 3.43 | 8C337 8C338 8C368 6C440 | 0.09 0.12 0.18 0.69 | BF178 BF179 BF180 BF181 | 0.40 0.36 0.36 0.32 | BU705 BU806 BU807 BU826A | 2.50 0.85 1.40 1.95 | HA1452 HD14538 HD38702-A2 HD38750A53 | 0.85 2.07 7.95 5.77 | ME0411 MJ2501 MJ3001 MJ481 | 0.75 3.30 1.43 1.53 | SKE2G3/04 SKE4F1/06 SKE4F2/08 SKE4F2/06 | 0.85 0.35 1.07 0.80 | T9013V T9014V T9016 T9019W | 4.95 2.42 1.02 1.98 | TD3F900H TDA1001B TDA1003A | 5.36 2.31 1.79 | TIC44 TIC45 TIC47 | 0.72 0.56 0.77 |
| 1\$921 2N2219A 2N3063 | 0.10 0.37 0.35 | 2SC2073 2SC2085-Q 2SC2091 | 1.54 1.65 1.30 | AN5120N AN5132 AN5250 | 4.50 4.42 4.40 | BC441 BC454 BC460 | 0.46 0.36 0.42 | BF182 BF183 BF184 | 0.34 0.39 0.43 | BUW84 BUX84 BUX85 | 1.39 0.50 0.69 | HD38750A 7 HD38800A50 HD44801A05 | 7.25 14.09 12.50 | MJE2955 MJE3055 MJE340 | 1.89 1.25 0.49 | SKE4F2/10 SKE4G2/02 SKE5F3/10 | 1.33 0.96 1.60 | T9034V T9035V T9051 | 1.45 1.40 7.14 | TDA1005A TDA1006A TDA1010AF TDA1011 | 7.08 4.25 2.40 | TIP120 TIP110 TIP112 TIP117 | 0.53 0.34 0.95 |
| 2N3054 2N3055 2N3442 2N3702 | 0.99 0.79 1.16 0.14 | 2SC2141 2SC2166 2SC2216 2SC2233 | 2.44 0.87 0.69 1.20 | AN5610 AN5612 AN5613 AN5630 | 7.43 2.07 4.20 3.95 | BC461 BC462 BC463 BC478 | 0.47 0.51 0.30 0.32 | BF185 BF194 BF195 BF196 | 0.39 0.14 0.14 0.17 | BY126 BY127 BY133 BY164 | 0.13 0.13 0.06 0.44 | HISH1010 HISH1004 HISH1002 HM6231 | 8.59 6.00 9.50 9.81 | MJE520 ML231 ML232B ML237B | 0.49 0.99 3.01 2.51 | SKS1/10 SL1310 SL1430T SL414 | 2.15 3.14 2.31 3.69 | T9054V T9057V T9062V T9064 | 5.46 2.77 0.49 3.90 | TDA1010 TDA1011A TDA1028 TDA10348 | 1.02 1.51 2.45 2.42 | TIP121 TIP126 TIP132 TIP137 | 0.40 0.38 0.99 0.96 |
| 2N3703 2N3705 2N3706 2N3707 | 0.18 0.16 0.14 0.16 | 2SC2236 2SC2278 2SC2314 2SC2335+8 | 1,69 1.14 0.87 (rt 7,00 | AN5701N AN6250 AN6300 AN6310 | 1.66 2.95 4.40 4.54 | BC479 BC532 BC546 BC547 | 0.41 0.28 0.17 0.10 | BF197 8F198 BF199 | 0.16 0.17 0.17 | BY176 BY179 BY182 | 0.52 1.42 1.05 | HM6232 HM6251 HM7103 | 10.95 5.25 4.85 | ML238 ML923 ML926 | 5.77 3.10 3.58 | SL432A SL439 SL471 | 3.44 2.48 2.86 | TA7027 TA7050 TA7051 | 4.80 1.74 1.74 | TDA1035S TDA1035T TDA1037 | 2.95 2.95 1.95 | TIP29 TIP2955 TIP29A | 0.84 0.86 0.46 |
| 2N3711 2N3771 2N3771 2N3772 | 0.11 2.04 1.55 | 2SC2551 2SC2565 2SC2565 2SC2570 | 1.26 3.84 0.80 | AN6340 AN6341 AN6363 | 6.46 1.42 16.00 | BC548 BC549 BC550 | 0.10 0.10 0.10 | BF200 BF218 BF224 BF237 | 0.37 0.36 0.17 0.65 | BY187 BY189 BY198 BY207 | 0.77 1.76 1.62 0.22 | HM9032 HM9012 HM9015 HT4207 | 4.00 3.22 3.24 13.25 | MM5314N MM5316N MM5318N MM5369N | 8.99 9.16 3.11 2.01 | SL480 SL490 SL901B SL91BA | 3.14 2.37 8.32 9.07 | TA7054 TA7060AP TA7061AP TA7069 | 2.55 0.71 1.27 3.13 | TDA10370 TDA1044 TDA1047 TDA10598 | 2.05 1.95 3.25 0.80 | TIP298 TIP29C TIP29D TIP3055 | 0.63 0.40 0.75 0.66 |
| 2N3773 2N3819 2N3823 2N3904 | 2.20 0.40 1.17 0.15 | 2SC2577 2SC2578 2SC2671 2SC288A | 1,60 6.75 0.91 | AN6531 AN6551 AN6552 AN6610 | 1.95 0.50 0.60 1.65 | BC556 BC557 BC558 BC559 | 0.16 0.10 0.10 0.10 | BF240 BF241 BF245 BF245B | 0.19 0.17 0.50 | BY208 BY210-400 BY210-600 | 1.11 0.18 0.27 | HT4208 KA2101 KC581C | 20.65 1.00 7.68 | MM5387AA/N MM5841N MN1400VL | 6.20 6.64 13.65 | SN16861AN0 SN16862AN SN16966N | 0.82 2.98 10.25 | TA7070P TA7072P TA7074P | 1.83 2.57 1.98 | TDA1054M TDA1060 TDA1082 | 1.21 2.60 3.25 | TIP30A TIP30C TIP31A | 0.41 0.40 0.34 |
| 2N3908 2N4101 2N4240 | 0.62 1.33 2.00 | 2SC3153 2SC372 2SC373 | 1.85 6.50 1.40 1.16 | AN7111 AN7115 AN7145 | 1.25 2.52 2.80 | BC560C BC635 BC636 | 0.14 0.34 0.20 | BF246A BF255 BF256 | 0.49 2.52 0.20 0.28 | BY210-800 BY223 BY224-600 BY226 | 0.19 1.43 1.88 0.25 | KC582C L200CV LA1201 LA1210 | 4.85 1.69 0.75 1.56 | MN1405 MN1435VX MP1192 MP2794 | 7.92 9.50 5.07 4.00 | SN29717N SN29716N SN29715N SN29722 | 7.19 3.66 6.04 11.95 | TA7076P TA7089P TA7092P TA7093P | 7.50 3.10 9.94 3.99 | TDA1151 TDA1190 TDA1190Z TDA1200 | 1.22 2.11 2.48 1.51 | TIP318 TIP31C TIP32A TIP32B | 0.38 0.30 0.35 0.46 |
| 2N4444 2N5293 2N5294 2N5296 | 0.90 0.50 0.50 0.48 | 2SC383 2SC388 2SC394V 2SC403C | 1.33 1.27 0.81 0.60 | AN7146 AN7151 AN7156 AN7158 | 9.90 2.37 2.85 2.34 | BC637 BC639 BC640 BCX34 | 0.24 0.36 0.24 0.40 | BF257 BF258 BF259 BF262 | 0.34 0.33 0.34 0.57 | BY227 BY228 BY229 1000 BY229-600 | 0.20 0.60 1.12 0.92 | LA1230 LA1320 LA1357N LA1363 | 1.44 2.87 9.00 | MP2812 MP8512 MPC596 MPF256C | 5.07 1.57 2.13 9.60 | SN29723AN SN29764AN SN29767 | 0.77 2.38 3.90 | TA7102P TA7108P TA7109 | 5.88 1.61 3.71 | TDA1235 TDA1236 TDA1270 | 3.88 3.30 3.74 | TIP32C TIP33 TIP33A | 0.20 0.85 1.02 |
| 2N5297 2N5298 2N6109 | 0.50 0.61 1.58 | 2SC458 2SC495 2SC515A | 0.34 0.92 1.85 | AN7218 AN7223 AU107 | 0.80 4.55 5.87 | BD115 BD116 BD124 | 0.36 9.70 1.31 | BF263 BF271 BF273 | 0.57 0.34 0.20 | BY255 BY295-600 BY298 | 0.13 1.03 0.20 | LA1364 LA1365J LA1385 | 1.05 3.02 1.15 1.53 | MPS6570 MPSA42 MPSA56 | 0.48 0.35 0.08 | SN297708N SN29772BN SN29771BN SN29791 | 3.69 5.60 4.15 1.67 | TA7122B/P TA7124P TA7129P TA7130P | 0.87 2.34 1.50 1.27 | TDA1327A TDA1412 TDA1420 TDA1440 | 1.50 1.08 1.52 3.45 | TIP33C TIP34 TIP41A TIP41B | 0.80 0.75 0.49 0.31 |
| 2N6130 2N6133 2N6180 2N6292 | 0.85 1.25 0.73 1.65 | 2SC535 2SC536 2SC537 2SC605L | 0.79 0.10 0.54 1.16 | AU110 AU113 AY105K AY106 | 5.69 6.95 2.08 1.09 | B0131 80132 80133 B0135 | 0.42 0.42 0.53 0.36 | BF274 BF324 BF336 BF337 | 0.20 0.23 0.33 0.45 | BY299 BY407 BY409 BY448 | 0.60 0.90 1.49 1.35 | LA1387 LA3350 LA3361 LA3390 | 5.95 1.43 1.60 5.52 | MPSA92 MPSU05 MPSU10 MPSU56 | 0.45 0.86 1.56 0.60 | \$N29798N \$N2709 \$N7400N \$N7401N | 5.56 0.44 0.61 0.36 | TA7136AP TA7137P TA7141AP TA7146P | 1.89 0.98 3.87 4.23 | TDA1470 TDA1470P TDA1506 | 2.90 4.25 6.58 | T1P41C T1P42A T1P42B | 0.68 0.60 0.79 |
| 2SA1006 2SA1011 2SA1015 | 1.50 1.65 0.49 | 2SC620 2SC643A 2SC668 | 1.46 1.54 0.67 | BA524 BA310 BA1310 | 8.94 0.14 1.98 | BD136 BD137 BD138 | 0.36 0.26 0.28 | BF338 BF355 BF362 | 0.40 0.49 0.60 | 8Y713 BYW56 BYX55-600 | 0.65 0.14 0.23 | LA4032P LA4100 LA4101 | 2.35 1.25 1.30 | MPSU60 MR818 MR854 | 1.33 0.33 0.50 | SN7402N SN7404N SN7408N | 0.65 0.52 0.27 | TA7148P TA7149P TA7152P | 1.67 3.26 2.72 | TDA1510 TDA1512 TDA1515 TDA1559 | 4.60 2.89 2.89 3.15 | T1P42C T1P47 T1S43 T1S90 | 0.82 0.65 1.43 0.21 |
| 2SA1012 2SA1020Y 2SA1027R 2SA473 | 1.25 0.80 0.45 0.75 | 2SC681 2SC682 2SC684 2SC693 | 4.40 1.88 1.65 0.63 | BA1320 BA1322 BA1330 BA145 | 1.38 3.95 2.75 0.19 | BD139 BD140 BD144 BD150 | 0.34 0.32 1.43 0.75 | BF363 BF371 BF391 BF417 | 0.50 0.50 0.25 0.84 | BYX71-600 BYX71-350 BYY56 BZY93C30 | 0.85 0.62 1.20 1.86 | LA4102 LA4112 LA4125 LA4138 | 0.75 0.56 2.25 4.98 | MR914 MSM5816RS MSM5840H MVS460-02 | 1.20 17.35 13.95 0.34 | SN7410N SN74121 SN7413N SN74141N | 0.27 1.60 0.37 2.65 | TA7161P TA7162P TA7172P TA7176P | 4.50 3.61 1.41 1.75 | TDA1670 TDA1770 TDA1905 TDA1908 | 4.48 2.75 1.27 2.98 | TL011CP TL494CN TL072CP TMP4320 | 1.56 8.55 1.45 15.00 |
| 2SA766S 2SC1173Y 2SC1474 2SC1509 | 4.95 1.25 1.25 1.36 | 2SC710 2SC711A 2SC717 2SC734 | 1,15 0.50 1,28 | BA148 BA154 BA155 BA156 | 0.25 0.40 0.12 | BD157 BD160 BD163 BD166 | 0.67 1.60 0.71 | BF418 BF422 BF423 BF450 | 1.87 0.30 0.33 | C106D C106M CA3046 | 0.37 0.76 1.55 | LA4140 LA4192 LA4220 | 0,70 1.50 1.25 | NE542 NE555 NE556 | 2.65 0.19 0.65 | SN74151AN SN74154N SN74190 | 1.51 1.27 1.35 | TA7193P TA7204P TA7206P | 4.80 2.15 12.49 | TDA1940 TDA1950 TDA2005 | 1.95 2.50 1.45 | TMS1024NLL TMS1025N TMS3720ANS | 10.50 6.25 5 5.25 |
| 2SA1095 2SA1103 2SA329 | 3.00 6.00 0.40 | 2SC783 2SC790Y 2SC828 | 1.43 3.98 1.85 0.28 | BA159 BA182 BA222 | 0.05 0.09 0.19 1.66 | BD175 BD179 BD181 | 0.42 0.28 0.30 0.99 | BF451 BF457 BF458 | 0.35 0.29 0.41 0.49 | CA3089 CA3090AQ CA3094 CA3131EM | 0.83 3.25 2.20 2.95 | LA4420 LA4422 LA4430 LA4440 | 1.72 1.90 1.29 1.35 | NP1106 DA202 DA47 OA91 | 0.11 0.16 0.14 | SN7420N SN7430 SN7440N SN7472 | 0.34 0.49 0.27 1.54 | TA7207P TA7208P TA7210P TA7214P | 1.46 2.15 1.45 3.63 | TDA2006 TDA2004 TDA2002 TDA2003 | 1.55 1.48 0.90 1.00 | TMS3748NS TMS3756 TMS3894NL TMS5102NLL | 14.95 13.65 19.25 6.25 |
| 2SA489 2SA490 2SA493 2SA562 | 1.17 1.32 2.25 0.57 | 2SC867A 2SC876 2SC930 2SC935 | 3.04 0.96 0.54 4.13 | BA302 BA311 BA312 BA313 | 1.24 0.65 1.45 0.76 | BD182 BD183 BD184 BD187 | 0.99 0.99 1.21 0.53 | BF459 BF460 8F469 BF470 | 0.52 0.99 0.20 0.25 | CD4001 CD4002 CD4008 CD4011 | 0.34 0.27 1.35 0.29 | LA4445 LA4460 LA4461 LA5112N | 1.80 1.75 1.70 1.18 | 0A95 0C28 0C29 0C36 | 0.09 2.52 2.15 7.53 | SN7474N SN7490AN SN74LS26N SN76001N | 0.44 0.93 1.45 1.65 | TA7215P TA7217AP TA7222 TA7226 | 2.58 1.45 1.95 3.57 | TDA2030 TDA2140 TDA2150 | 1.35 2.14 6.20 | TUA2000 TY6010B ULN2204 | 8.98 2.97 8.50 |
| 2SA564 2SA614 2SA628 | 0.62 4.88 0.37 | 2SC940 2SD1128 2SD1138 | 4.68 2.90 0.94 | BA317 BA318 BA328 | 0.04 0.09 1.65 | 80189 80190 80201 | 0.69 0.69 0.49 | BF471 BF472 BF479 | 0.33 0.33 0.61 | CD4012 CD4013 CD4016 | 0.24 0.33 0.36 | LA7020 LA7025 LA7027 | 13.86 11.97 10.92 | DC44 DC45 DC72 | 0.35 0.18 0.44 | SN76013ND SM76023N SM76023ND | 3.50 2.97 3.91 | TA7229P TA7230P TA7233P | 4.22 1.35 3.46 | TDA2151 TDA2160 TDA2161 TDA2170 | 1.30 4.01 2.40 4.50 | UPA53C UPC1003 UPC1009C UPC1025H | 4.94 5.95 6.32 2.90 |
| 2SA639S 2SA659 2SA673 2SA684 | 1.75 0.49 1.50 1.20 | 2SD1273 2SD1453 2SD152K 2SD198 | 1.30 1.33 2.64 3.87 | BA333 BA335 BA5102A BA511 | 1.37 6.27 2.50 1.55 | BD202 BD203 BD204 BD207 | 0.60 0.46 0.47 1,79 | BF480 BF491 BF506 BF532 | 1.79 0.50 0.43 0.24 | CD4017 CD4020 CD4021 CD4023 | 0.40 1.23 0.39 0.28 | LA7040 LA7042 LA7800 LA7801 | 9.20 3.90 1.03 0.90 | 0C75 0N236 0N782 0T121 | 0.44 1.06 1.98 1.45 | SN76033N SN76110N SN76115AN SN76131 | 5.54 0.90 1.61 0.82 | TA7240AP TA7245P TA7310P TA7313AP | 2.95 5.92 2.15 0.65 | TDA2270 TDA2520 TDA2522 TDA2524 | 3.96 2.25 2.50 4.50 | UPC1028H .UPC1032H UPC1042C UPC1156H | 2.00 0.82 8.95 3.94 |
| 2SA697 2SA699 2SA715 2SA748 | 0.90 1.25 0.95 1.95 | 2SD234 2SD235 2SD24 2SD257 | 0.47 0.60 2.29 1.96 | BA514 BA521 BA524 BA526 | 1.00 1.20 8.94 7.98 | B0208 B0222 B0225 B0228 | 1.23 0.50 0.46 0.63 | BF596 BF597 BF694 BF757 | 0.18 0.27 0.22 0.59 | CD4025 CD4028 CD40408 CD4047 | 0.64 0.60 | LB1274 LC7800 LD3120 | 3.61 9.20 1.13 | PT6042 PT8504 R1038 | 2.45 4.98 2.19 | SN76227N SN76226DN SN76228N | 0.85 2.00 3.27 | TA7314 TA7323P TA7325P | 5.94 3.15 1.15 | TDA2525 TDA2532 TDA2530 | 3.90 2.50 2.20 | UPC1161C UPC1182H UPC1186H | 4.98 1.50 1.05 |
| 2SA817 2SA835 2SA836 | 0.18 2.50 0.89 | 2SD292 2SD313 2SD325D | 4.09 2.65 2.26 | BA527 BA532 BA536 | 2.98 1.50 1.70 | BD229 BD232 BD234 | 1.05 0.49 0.42 | BF759 BF761 BF762 | 0.47 1.05 0.34 | CD4049 CD4052 CD4066 | 1.06 0.24 0.64 0.21 | LD3150 LM1017N LM1877 LM2808 | 2.75 1.81 3.50 5.94 | R1039 R2008B R2009 R2010B | 2.19 1.33 1.98 2.98 | SN76242 SN76243 SN76396 SN76533N | 5.23 5.23 2.90 2.47 | TA7339P TA7340P TA7607AP TA7609 | 1.85 5.95 2.10 2.65 | TDA2541 TDA2540 TDA2545Q TDA2560 | 1.88 2.15 5.94 2.17 | UPC1181H UPC1185H UPC1188 UPC1212C | 1.35 2.10 8.77 0.80 |
| 2SA844 2SA872 2SA884 2SA9378 | 0.65 0.58 2.15 0.97 | 2SD350 2SD353 2SD389 2SD401 | 3.05 7.50 2.41 1.40 | BA6209 BA656 BA7100 BA841A | 3.10 1.00 11.35 28.98 | BD237 BD238 BD239 BD240 | 0.47 0.28 0.45 0.57 | BF869 BF870 BF959 BF960 | 0.49 0.30 0.42 0.49 | CD4069 CD4070 CD4081 CD4093 | 0.29 0.25 0.14 0.40 | LM2877 LM317CKC LM324N LM339N | 7.45 1.08 0.98 0.41 | R2029 R2030 R2257 R2265 | 1.33 1.33 2.35 1.49 | SN?6532N SN?6545 SN?6546N SN?6549 | 0.91 4.87 3.47 2.45 | TA7611AP TA7616P TA7622AP TA7628P | 2.32 5.25 8.94 2.50 | TDA2575A TDA2578A TDA2576A+1 | 0.50 2.73 (it 12.35 | UPC1225H UPC1230 UPC1238 | 4.83 1.48 2.10 |
| 2SA940 2SA940 2 2SA950 | 2.23 2.14 0.72 | 2SD414 2SD471 2SD560 | 1.98 2.13 2.95 | BA843 BA854 BAV18 | 3.96 5.76 0.06 | BD241 BD242 BD243A BD243C | 0.39 0.50 0.37 0.50 | BF970 BFR39 BFR61 | 0.50 0.44 0.92 | CD4511 CD4528 CD4556 | 1.10 2.04 1.47 | LM340K LM348N LM380N | 11.85 2.15 2.80 | R2305 R2322 R2323 | 1.18 0.67 0.76 | SN76570 SN76611 SN76620 | 3.08 2.59 2.59 | TA7629P TA7630P TA7640AP | 7.50 0.95 2.40 | TDA2581 TDA2582 TDA2591 TDA2594 | 1.60 1.80 2.70 3.40 | UPC1278H UPC1351C UPC1350C UPC1353 | 5.95 1.81 1.40 1.58 |
| 2SA951 2SA966-Y 2SA999 2SB774 | 1.75 0.85 0.75 0.65 | 2SD600 2SD601R 2SD613 2SD636 | 2.98 0.65 1.03 0.40 | BAV19 BAV20 BAV21 BAW62 | 0.11 0.35 0.12 0.11 | BD244 BD244C BD245C BD246C | 0.31 0.72 0.70 0.80 | BFR62 BFR79 BFR81 BFR86 | 0.50 0.29 0.29 1.08 | CR02AM-8 CV12E CX095D CX104 | 1.70 4.09 3.14 8.77 | LM567CN LM6402/011 LM6402A093 LM748 | 1.71 10.23 10.15 0.69 | R2354A R2354B R2443 R2461 | 0.64 2.01 1.36 1.50 | SN 76660N SN 76666N SN 76708 SN 76709N | 2.48 1.41 4.86 5.94 | TA7672P TA7676P TA7726P TAA320A | 2.55 2.81 10.25 1.27 | TDA2593 TDA2595 TDA2600 TDA2611AQ | 3.40 5.52 7.60 1.25 | UPC1355C UPC1363 UPC1362 UPC1365C | 2.13 4.20 4.10 2.50 |
| 2SB185 2SB375 2SB400 2SB405 | 1.13 3.87 0.40 1.03 | 2SD639-R 2SD655 2SD657 2SD661A | 0.72 0.98 2.80 0.80 | BAX12 BAX13 BAX16 BC107B | 0.11 0.11 0.08 0.11 | BD253 BD278A BD317 BD318 | 1.05 0.70 1.20 2.72 | BFR89 BFR90A BFX29 BFX84 | 1.63 0.85 0.34 0.37 | CX108 CX109 CX130 CX134 | 12.48 7.86 8.76 11.10 | LM8360 LM8361 LR3419 LR3471 | 3.87 3.57 9.37 | R2540 R2540X R2615 | 1.91 3.30 0.67 | SN75707N SN75705N SN75730 | 1.23 6.60 5.54 | TAA350A TAA570 TAA621AX1 | 0.80 1.85 4.85 | TDA26120 TDA2611A TDA2610 | 4.68 1.25 2.79 | UPC1366 UPC1360C UPC1378H | 2.50 1.65 4.51 2.44 |
| 2SB511 2SB54 2SB546 | 2.65 1.39 0.56 | 2SD731 2SD773 2SD811 | 2.11 0.60 7.63 | BC108B BC109B BC113 | 0.15 0.14 0.14 | BD375 BD380 BD410 BD433 | 0.42 0.76 0.49 0.44 | BFX85 BFX86 BFX87 | 0.41 0.36 0.55 | CX136 CX139 CX157 | 11.49 11.83 5.52 | LU1141 LU52012 LU52011 | 9.37 7.27 5.95 14.95 | RCA2060 RGP01-15 RGP10 RGP30M | 0.70 0.30 0.28 | SN79810N SN79832N SN99041 SN99042 | 0.60 1.35 5.54 4.35 | TAA661B TAA691 TAA700 TAA930 | 1.00 8.58 2.37 4.87 | TDA2620 TDA2630 TDA2631 TDA2640 | 1.96 2.50 2.73 3.61 | UPC141C UPC1458 UPC151C UPC2002 | 4.95 2.00 2.95 1,48 |
| 2SB56 2SB618A 2SB631 2SB643 | 2.80 2.22 2.00 0.50 | 2SD823 2SD837 2SD841 2SD856 | 1.98 1.48 2.00 1.00 | BC119 BC126 BC132 BC135 | 0.36 0.20 0.14 0.14 | BD434 BD435 BD436 BD437 | 0.45 0.49 0.60 0.41 | BFX88 BFX89 BFY50 BFY51 | 0.34 0.44 0.30 0.33 | CX158 CX177 CX187 CX755 | 5.50 0.75 5.26 12.95 | LU03112 M193 M21C M23C | 12.37 6.83 1.30 1.98 | RT402 RT905A S1299 S2800D | 1.58 2.38 5.34 1.84 | SPS\$384 ST1702L STA401 STA441C | 1.98 0.99 2.50 | TAA970 TAG626-600 TBA120AS TBA120SB | 2.83 1.20 0.70 1.05 | TDA2652 TDA2653 TDA2654 | 8.25 6.18 4.73 | UPC30C UPC324C UPC32C | 2.51 4.70 4.95 |
| 2SB669 2SB681 2SB695 2SB774 | 3.57 3.96 1.98 | 2SD857Q 2SD882 2SD894 | 1.84 1.15 1.75 | BC137 BC138 BC139 BC140 | 0.18 0.34 0.33 | BD438 BD441 BD442 BD509 BD510 | 0.52 0.59 0.66 1.42 | BFY52 BFY79 BFY90 BLY49 | 0.27 0.49 0.42 2.20 | EX885A E1222 E5024 | 6.85 0.40 0.29 | M293 M51102L M5115P | 6.71 1.69 5.24 | S2802 S2818 S3702S S40W | 2.90 4.05 5.21 13.10 | STA471C STK0029 STK0050 | 3.10 7.95 5.54 7.72 | TBA120T TBA120U TBA120A | 0.97 2.50 1.05 | TDA2670 TDA2680 TDA2740 TDA2780AQ | 2.48 3.20 6.00 8.84 | UPC339C UPC41C UPC4558C UPC474 | 4.35 4.10 2.15 5.11 |
| 2SB774 2SB819 2SC1096 2SC1104 2SC1106 | 0.65 1.13 1.16 3.98 4.54 | 2SD898 2SK105H 7805 T022 7808 | 0.82 2.15 0.63 0.45 | BC141 BC142 BC143 | 0.45 0.34 0.23 0.34 | BD510 BD519 BD529 BD530 BD533 | 0.75 0.98 0.60 0.80 | BR100 BR101 BR103 BR303 BBC84 | 0.22 0.70 0.66 1.15 | E5386 GD243 GF758 HA11215 | 0.25 4.34 0.84 1.75 | M51203L M51231P M5134-9341 M51353P | 3.15 3.07 4.13 5.25 | S60808 SA8063 SAA1006 SAA1020 | 9.98 5.17 1.85 4.76 | STK016 STK022 STK031 STK040 | 6.91 5.25 12.95 13.34 | TBA1440 TBA1441 TBA395 TBA396 | 1.94 1.95 1.10 1.20 | TDA2795 TDA2791 TDA2910 TDA3300B | 2.78 1.81 13.25 6.98 | UPC554C UPC575C2 UPC580C UPC587C2 | 1.85 2.40 5.60 1.34 |
| 2SC1106 2SC1114 2SC1116 2SC1124 2SC1129 | 1.25 4.95 1.26 1.85 | 7812-T022 7815 7905 AD140 | 0.35 0.64 0.80 1.06 | BC147 BC148B BC148C BC149B | 0.11 0.13 0.11 0.13 | B0534 B0535 B0536 B0537 | 0.67 0.52 0.45 0.50 | BRX44 BRX49 BRX39 BSS38 | 2.08 0.60 0.34 0.69 0.67 | HA11225 HA11229 HA11235 | 2.53 4.29 3.46 1.75 | M51381P M51393AP M51394P M5142P | 5.98 9.48 12.50 6.85 | SAA1025 SAA1024 SAA1075 SAA1121 | 4.40 2.81 4.25 7.44 | STK054 STK058 STK077 STK1039 | 3.95 27.50 7.67 | TBA400 TBA440C TBA4800 TBA510 | 2.39 2.34 1.30 | TDA3330 TDA3506 TDA3501 | 2.88 4.40 12.09 | UPC592H UPC595 UPC596 UPD1514C | 2.15 2.95 1.90 4.76 |
| 2SC1129 2SC1131 2SC1158 2SC1162 2SC1172 | 0.64 3.33 0.55 2.22 | AD143 AD145 AD161 | 1.93 1.60 0.30 | BC153 BC154 BC159 BC160 | 0.14 0.14 0.16 0.40 | BD537 BD538 BD544B BD677 BD679 | 0.50 0.67 0.83 0.40 0.57 | BSS38 BSTBD140G BSTC0246 BSTC0233 BSTCC0143 | 4.93 8.64 6.12 3.07 | HA11124 HA1125 HA1137W HA1138 | 5.25 4.29 1.38 5.03 | M5144P M51513L M51515BL | 3.77 2.55 2.75 | SAA1124 SAA1130 SAA1174 SAA1250 | 2.45 4.99 7.77 3.95 | STK2110 STK2145 STK2240 | 5.75 7.33 16.95 16.65 | TBA520 TBA530 TBA540 | 1.37 1.84 1.30 1.15 | TDA3500 TDA3510 TDA3520 TDA3540 | 4.25 5.95 9.71 6.99 | UPD2819C UPD553-164 UPD8049C-1 X0022CE | 4.98 19.52 11.50 5.75 |
| 2SC1195 2SC1213 2SC1226 2SC1293 | 6.09 0.89 1.46 0.90 | AD162 AF114 AF115 AF118 | 0.45 2.47 1.24 1.20 | BC161 BC168 BC169C BC170 | 0.28 0.36 0.16 0.16 | BD680 BD681 BD696 BD699 | 0.52 1.40 2.47 1.85 | BSTD1043 BSV57B BSW68 BSX19 | 2.85 3.91 0.60 0.34 | HA11414 HA1156 HA1160 HA1166X HA1167 | 5.65 1.16 4.79 6.60 6.45 | M51517L M5192 M5194AP M5231L | 2.90 2.20 5.74 4.80 | SAA1251 SAA1351 SAA3027P SAA5000 SAA5010 | 3.29 8.11 2.55 3.25 | STK2250 STK3042 STK3044 STK4019 | 18.95 4.95 5.75 4.50 | TBA560C TBA570Q TBA570A TBA673 | 1.40 1.60 1.71 2.45 | TDA3541 TDA3560 TDA35710 TDA3576 | 2.22 4.25 2.83 7.48 | X0029CE X0031CE X0035TA X0040TA | 7.09 6.32 6.18 4.50 |
| 2SC1306 2SC1317 2SC1364 2SC1383 | 1.98 0.50 0.49 1.20 | AF127 AF139 AF178 AF179 | 0.65 0.40 1.45 0.55 | BC171 BC172B BC173 BC174B | 0.10 0.11 0.27 0.17 0.27 | 80700 80707 80707 80709 80710 | 3.70 0.60 0.60 0.80 | BSX20 BSY52 BSY79 BT108 | 0.19 0.50 0.51 1.45 | HA11706 HA11705 HA11703 HA11701 | 6.45 3.61 8.00 4.22 | M53274P M54532P M54544L | 1.33 1.50 1.22 | SAA5010 SAA5012 SAA5020 SAA5030 SAA5050 | 4.40 5.50 5.78 6.33 7.74 | STK433 STK4332 STK4352 STK4352 | 4.78 6.25 4.95 1.95 | TBA700 TBA720 TBA730 | 1.85 2.30 3.55 | TDA3590 TDA3591 TDA3650 TDA3652 | 6.79 6.45 5.90 2.60 | X0042CE X0043CE X0056CE X0057GE | 4.35 2.75 6.25 6.00 |
| 2SC1391 2SC1398 2SC1413A 2SC1446 | 2.45 0.75 5.00 1.25 | AF180 AF181 AF186 AF239 | 0.55 0.53 0.53 0.53 | BC177 BC178 BC179 BC182 | 0.35 0.26 0.26 0.09 | 80809 80810 80879 80895 | 0.80 0.69 8.74 2.18 | BT119 BT120 BT121 BT123 | 1.76 2.17 2.48 1.98 | HA11710 HA11710 HA11713 HA11711 HA11715 | 4.56 3.45 2.90 2.00 9.90 | M58478P M58485P MA06 MA8001 MA8003 | 6.75 12.75 1.07 0.82 | SAA5050 SAB1009B SAB3011 SAB3013 SAB3021 | 7.74 5.98 7.34 2.47 7.90 | STK437 STK4372 STK4372 STK460 | 7.21 7.50 13.13 7.02 | TBA7500 TBA760 TBA800 TBA810S | 2.90 1.71 1.08 1.61 | TDA3651AQ TDA3651 TDA3651A TDA3950 | 3.95 1.95 2.50 4.50 | X0065CE X0074GE X0077GE X0079CE | 5.77 10.00 15.96 4.95 |
| 2SC1447 2SC1475 2SC1505 2SC1514 | 2.07 0.60 1.00 1.37 | AF279 AN115 AN155 AN206 | 0.53 0.88 3.98 1.89 2.58 | BC182LB BC183LB BC184 BC184LB | 0.14 0.26 0.13 0.26 | BD901 BD902 BDW83C BDW84C | 0.99 0.65 0.99 0.99 | BT151-800R BT16018 BU106 BU108 | 1.03 2.42 2.48 1.50 | HA11714 HA11716 HA11725 | 9.90 7.76 13.10 18.26 16.00 | MB3705 MB3712 MB3713 | 1.16 1.98 1.85 1.69 2.09 | SAB3021 SAB3024 SAB3209 SAB3210 SAF1032P | 6.36 5.82 3.10 | STK466 STK4833 STK501 STK502: | 11.77 9.52 6.32 7.25 | TBA810T TBA820 TBA820M TBA890 | 1.75 0.66 0.82 3.30 | TDA4050B TDA4280 TDA4290 TDA4400 | 3.40 7.20 1.95 4.90 | X0096CE X0109CE X0113CE | 4.95 5.95 11.25 2.07 |
| 2SC15/3Q 2SC1583 2SC1617 | 1.63 0.34 3.89 | AN208 AN210 AN211 | 3.55 2.28 3.25 | BC186 BC187 BC204 | 0.25 0.28 0.16 | BDX32 BDX53A BDX53B | 1.88 4.93 3.35 | BU109 BU110 BU125 | 2.25 5.69 2.48 | HA11725MP HA117555P HA11781 HA1180 | 16.00 6.23 21.15 5.15 | MB3730 MC13002 MC1310P MC1327P | 2.09 3.90 2.25 1.33 | SAF1032P SAF1039 SAS5010 SAS560S | 3.58 1.95 8.39 1.66 | STK5730 STK7716 STK7772 | 12.40 3.20 13.10 3.71 | TBA920 TBA940 TBA950 | 1.65 1.87 1.55 | TDA4420 TDA4422 TDA4427S TDA4431 | 2.30 8.32 9.00 2.27 | X0195CE X0204CE X0261CE ZPY120 | 7.50 8.74 8.90 3.25 |

USE YOUR ACCESS OR BARCLAYCARD 常 TEL 0902 712083

★ VIDEO HEADS ★ FROM £13.95 EACH PLUS + PLUS + PLUS GENEROUS MIXED QTY DISCOUNTS

| | PLUS + | PLUS + P | <u>LUS</u> | GENERO | USI | MIXED | QTY | DI | SCO | UNTS | |
|--|---|---|----------------|---|---------------------------------------|--|---|--|---|--|--|
| | | P7200 VS1 VS2 VS3 VS5 | | NATIONAL PANASON Head Part Nos.: VEH0099 | IIC 0103 0115 | 0121 0131 | | | HEADS Head | | Price |
| | /\$9500 V\$9700 V\$-P1 \ | /S-P5 | VHS A | Head Part Nos.: VEH0099 Machine Nos.: NV300 NV3 NV3000 NV7000 NV720 NV8200 NV8400 NV8600 I | 122 NV332 N 0 NV7500 NV8610 NV8 | V333 NV340 NV390 NV7800 NV7850 620 | NV2000 NV8170 | VHS B | Part No. Beta a Beta b | | 1 + £16.95 £16.95 |
| AMSTRAD Machine Nos.: \ Machine Nos.: \ | VCR4500 VCR5200 VCF | 9000 | VHS T | Head Part Nos.: VEH0171 Machine No.: NV370 NV37 | VEH0218 | 020 | | VHS M | BETA D BETA E | | £27.50 £34.49 |
| VCR4600 | ¥0717 000 | | 9VH4600 | Head Part Nos.: VEH0171 Machine No.: NV330 NV73 | | | | VHS N | BETA T BETA W BETA X | | £21.00 £19.95 £31.92 |
| | 3292 8903 3V00 3V01 3 | V06 3V16 3V22 3V23 3V24 | | Head Part Nos.: VEH0286 Machine No.: NV430 | | | | VHS W | VHS VIDE | 0 | |
| | 1 3V35 3V36 3V38 3V3 | 9 3V49 | VHS A | Head Part Nos.: VEH0174 Machine No.: NV366 | | | | VHS X | VHS A VHS B VHS C | | £13.95 £13.95 £18.75 |
| FISHER Machine Nos.: | FVH — D520 D530 D6 | 20 D720 P420 P510 P520 | 1410.11 | SHARP Head Part Nos.: DDRMU (| 0002 HE17/2 | 1/27 | | | VHS D VHS E | | £81.76 £75.43 |
| GEC P530 P615 P620 | 0 P622 P710 P720 P72 | 1 P/22 | VHS U | Machine No.: VC581/2/3 6 Head Part Nos : DDRMII (| 51 681/2/3/5 2001 HEDD 0 | 5 659 699 1002 HEO2 04 05 0 | 5 | VHS S | VHS F VHS H | | £81.69 £21.25 |
| Head Part Nos.: | : 5458161 5458165 4000H 4001H 4002H | | VHS I | Machine No.: 2C9 VC110 VC386 VC387 VC388 VC4 | 0 VC200 VC 77 VC481 V | 02 2 0 VC300 VC38 C482 VC930 VC970 | 1 VC384) VC3300 | | VHS I VHS K VHS L | | £21.25 £21.25 £81.87 |
| Head Part Nos.: Machine Nos.: 4 | : 5458282,5458413 545 | 8415 5458992 | VHS K | VC9100 VC9300 VC9400 V Head Part Nos.: DDRMU (Machine No.: VC7300 VC7 | 0001 HE09 | | | VHS C | VHS M VHS N | | £14.75 £26.95 |
| HITACHI | | | | Head Part Nos.: DDRMU (Machine No.: VC6300 | | | | VHS E | VHS R VHS S | | £21.00 £18.75 |
| Machine Nos.: \ Head Part Nos.: \ | : 545 8104 | VITEEOO | VHS A | Head Part Nos.: DDRMU (Machine No.: VC8300 | 0001 HE12 | | | VHS L | VHS T VHS U VHS V | | £19.95 £20.50 £29.00 |
| Head Part Nos.: | VT4000 VT4200 VT5000 : 5458161 5458165 VT6500 VT7000 VT800 | 0 VT8040 VT8100 VT8500 | Aug u | Head Part Nos.: DDRMU (Machine No.: VC2300 | 0001 HE14 | | | VHS F | VHS W VHS X | | £21.95 £35.00 |
| VT8700 VT9000 | VT9300 VT9500 VT970 | 0 VT9900 | VHS I | SANYO Head Part Nos.: 1430242 | T01700 143(| 12/2 T22300 | | | VHS Z | FERGUSON | £14.25 |
| Head Part Nos.: \ Machine Nos.: \ | : 5458282 5458413 545 VT11 V14 VT33 VT34 V | 8415 5458992 T330 VT340 VT5030 VTP10 VTP | 30 VHS K | Machine No.: VTC5000 VT Head Part Nos.: 1430242 | C5150 VTC5 | 300 VTC5400 | | BETA D | 01X0 003 2 01X0 027 | 2 22 085 | £31.35 £46.02 |
| iπ | MDOCAE MDOCAA MDOCA | E 1/00040 1/00044 1/00005 | | Machine No.: VTC5350 VT Head Part Nos.: 1430762 | C5500 | | | BETA D | 01X0 033 8 01X0 040 0 | 002 | £47.05 £48.32 |
| | VR3993 VR3975 VR39 3 VR3993 VR3975 VR39 | 5 VR3913 VR3914 VR3935 85 VR3986 VR3833 | VHS A | Machine No.: VTC9300 VT Head Part Nos.: 143072 T | 02100 | 1500 | | BETA X | 01X0 056 (01X0 057 (01X0 082 (| 002 | £61.55 £31.36 £46.02 |
| JVC (see als | so Ferguson) | 0 HR3320 HR3330 HR3350 | | Machine No.: VTC9300PS SONY | VTC9350 | | | BETA X | 01X0 083 (| | €66.03 |
| HR3360 HR366 | 60 HR3750 HR3 860 | HR4100 HR7200 HR7600 HRD121 HRD140 HRD150 | | Head Part Nos.: A6762 04 Machine No.: SL3000, 800 | 4A, 044B, 0 00, 8080, SL | 54A, 147A .T 6Me, 7, 7E, 7Mi | E | BETA A | PHILIPS 310 274 44 691 200 54 | | POA £49.68 |
| HRD220 HRD22 | | | VHS A | Head Part Nos.: A6762 01 Machine No.: SL5W, 5000 | 5100 SLC5 | , C6, C7 | | BETA B | 691 200 98 691 201 12 | | £62.02 £61.66 |
| MITSUBISHI Machine No.: HS HS700 HS303 H | I\$200 | | VHS A VH700 | Head Part Nos.: A6762 07 Machine No.: SLC20, C30 SLF1, F30, HF72, T20, T30 | 2A, 122A, 1 , C33, C40,) | 36A, 139A, 213A C44 | | BETA W | 691 201 66 691 201 78 691 202 87 | J | £61.93 £49.96 £55.37 |
| FERGUSO | N/IVC | | | | | | | | | | |
| VID1 C | 01X0-003-381 01X0-018-024 | Tension band T3292/PU545 Take up idler T3292/PU477 | | | 2.55 5.00 | | DRIV | /E | BEL | | |
| VID3 C | 01X0-018-025 01X0-018-729 | Rewind idler assembly T3V Take up idler T3V00/PU492 | 16/PU49282 | | 6.20 6.95 | VP 77 VP 68 | AKAI DBK135 DBK135 | £0.86 | HR 2200 HR 3300 | JVC DBK137 DBK107 | £0.68 £1.65 |
| VID5 C | 01X0-040-006 01X0-033-454 | Loading belt T3V29/30/PU4 Roller Assy. (cass. Housing | 8941-2 | 49042 | 0.26 4.50 | VP 7100 VS 1 | DBK103 DBK134 DBK101 | £1.42 £1.76 £1.08 | HR 3330 HR 3360 HR 3600 | DBK126 DBK103 DBK107 | £1.65 £1.65 £1.42 £2.66 £1.42 |
| VID7 C | 01X0-040-007 01X0-040-017 | Take up idler 3V29/30/PU44 Reel motor assembly 3V29/ | 30/PU51381 | | 2.90 27.95 | VS 3 VS 5 EG VS 10 | DBK134 DBK101 DBK136 | £1.76 £0.68 £1.65 £1.42 | HR 3660 HR 4100 HR 7200 | DBK103 DBK127 DBK139 | £2.25 £0.86 |
| | 01X0-065-009 01X0-065-016 | Capston motor 3V35/36/38/ Cass. housing Assy. 3V35/3 | | | 22.10 22.00 | VS 9300 VS 9500 VS 9700 | DBIC103 DBIC103 DBIG102 | £1.42 £1.96 | HR 7600 HR 7650 HR 7700 | DBK138 DBK132 DBK108 | £0.86 £0.86 £1.76 |
| GEC/HITA | | | | | | FE | DBK103 RGUSON | £1.42 | NATIO | NAL PANASO | NIC. |
| VID12 \ | V5577355 V6413663 | GEC 4100/Hitachi VT11E c GEC 4000/Hitachi VT33 f/f | rewind arm | | 23.50 2.75 | 3 V 22 | DB#103 DB#103 DB#103 | £1.42 £1.42 £1.42 | NV 300 NV 330 NV 332/333 | DBK110 DBK110 VID7521 | £1.76 £1.76 £1.52 £1.52 £1.30 |
| VID14 \ | V6861471 V6861482 | GEC 4001/2/Hitachi 93/950 GEC 4001/2/Hitachi 93/950 GEC 4004/Hitachi VT33 f/f | 0 play idler | | 1.95 4.20 1.80 | I 3 V 31/32 | DBH105 DBH137 VID7806 | £0.83 £0.68 £0.94 | NV 336 NV 450 NV 777 | VID7521 DBK133 DBK131 | 17.98 |
| | V68869 71 V2 42 3461 | ET541 Tuner Unit | rewind anni | | 6.00 | 3 V 38/39 3 V 42/43/44 | DBK150 DBK150 VID7540 VID7540 | £0.88 £0.88 £0.70 £0.70 | NV 2000 NV 3000 NV 7000 NV 7200 | DBK109 DBK113 DBK111 DBK140 | £1.76 £1.76 £1.08 |
| | L PANASONIC | Fast forward idler NV2000 | - | | 0.85 | 3 V 55/57 | VID7540 FISHER | \$0.70 | NV 8600 | DBK112 | £1.08 £1.76 |
| VID18 \ | VXP0344 VXZ0078 | Idler NV7000/7200 Tension Band NV7000 | | PLEASE NOTE | 0.85 3.50 | VBS 7000 VBS 7600 | DBK146 DBK105 DBC105 | £2.66 £2.34 £2.34 | VC 381/383 VC 385/386 | SHARP DBK116 DBK116 | £1.52 £1.52 |
| VID20 \ | VXP0521 VXP0463 | Idler NV370 Reet Idler NV777 | ALL | . VIDEO SPARES | 2.65 3.40 | VBS 9000 | DBI410 VID7532 | £2.34 £1.76 £1.62 | VC 385/386 VC 2300 VC 6000/6300 VC 6500 | VID7545 DBK117 DBK117 | £1.03 £1.76 £1.76 |
| VID22 \ | VXP0432 VXP0401 | Pinch Roller NV333 Idler wheel NV333 | 1 | HANDLING | 3.30 1.25 | V 4000 H V 4001 H | GEC 08K129 D8K129 | £0.68 £0.68 | VC 7300 VC 8300 VC 9300/9500 | DBK118 DBK119 DBK120 | 합.52 합.52 합.03 합.76 합.76 합.76 합.76 합.76 |
| SANYO/FI | ISHER | | | 1.25 + VAT | | V 4002 H V 4100 H | DBK129 DBK128 | 20.68 £1.95 | VC 9700 | DBK121 | €3.18 |
| VID25 1 | 4529V10800 1430662T01201 | Reel motor VTC5000/5150 Reel drive pulley VTC 5000 Pinch roller VTC5000/5150 | ı | | 9. 50 4.95 | | DBK128 DBK163 DBK125 | £1.95 £1.42 £1.46 | SL 8000 SL 8080 SL 8500 SL 8600 | SONY DBK115 DBK115 DBK115 | £2.66 £2.66 |
| VID27 1 | PR2758 1430490400900 | Gear idler Fisher FVH-P615 | 5 | | 3.85 4.50 | VT 7000 | DBK142 DBK143 | £0.77 £0.68 | SL 8500 SL 8600 SLC 5 | DBK115 DBK100 | £2.66 £2.66 £1.55 |
| VID28 1 | 1430420400300 | Heart idler Fisher FVH-P61 | 5 | | 2.95 | VT 8500 | DBK129 DBK144 DBK129 DBK129 | £0.68 £0.68 £0.50 | SLC 5 SLC 6 SLC 7 SLC 9 SLJ 7 | VID7519 DBK100 DBK130 | 22.66 22.66 22.66 22.66 51.55 51.36 51.55 |
| CHADD | | | | | | VT 9500 | DBK129 | €0.50 | SLIZ | DBK100 | |
| | RMOTP1029 RMOTV1008 | Capston motor 73/9300 Reel motor VC9700 | | | 33. 55 17.95 | ; | OYNA | ٠ | SLT 7 ME SLT 7 MER | DBK100 DBK100 | £1.55 £1.55 |
| VID29 F VID30 F VID31 M | RMOTP1029 RMOTV1008 NIDL0006 NIDL0005 | Capston motor 73/9300 Reel motor VC9700 Idler VC387H etc Reel idler VC9300 etc | | | 33.55 17.95 1.75 1.85 | VTC 5000.5150 | SANYO VID7807 VID7807 DEK105 | £1.19 £1.19 £0.70 | SLT 7 ME SLT 7 MER | DBK100 DBK100 | £1.55 £1.55 |
| VID29 F VID30 F VID31 N VID32 N VID33 N | RMOTV1008 NIDL0006 NIDL0005 NIDL0004 | Reel motor VC9700 Idler VC387H etc | | | 17.95 1.75 | VTC 5000.5150 VTC 6000 VTC 5300 VTC 5400 VTC 5500 VTC 6500 | SANYO VID7807 VID7807 DEK105 DEK105 DEK106 VIO7533 | £1.19 £0.70 £0.70 £1.76 £0.78 | SLT 7 ME SLT 7 MER V 55/57 V 66/67 V 7540 | DBK100 DBK100 TOSHIBA VID7543 VID7540 OBK123 | £1.55 £1.55 £0.91 £0.91 £1.76 |
| VID29 VID30 VID31 VID32 VID33 VID33 | RMOTV1008 NIDL0006 NIDL0005 NIDL0004 AMPS/BULBS LA9295 | Reel motor VC9700 Idler VC3871 etc Reel idler VC9300 etc Idler wheel VC2300 Universal lamp without sock | | | 17.95 1.75 1.85 2.15 | VTC 5000.5150 VTC 6000 VTC 5300 VTC 5400 VTC 5500 VTC 6500 VTC 9306 VTC 9350 VTC 9350 VTC 9350 | SANYO VID7807 VID7807 DEK105 DEK105 DEK106 VID7533 DBK104 DBK145 VID7809 | £1.19 £0.70 £0.70 £1.76 £0.78 £2.66 £2.66 £2.66 | SLT 7 ME SLT 7 MER V 55/57 V 66/67 V 7540 V 8600 V 9600 V 5250 | DBK100 DBK100 TOSHIBA VID7543 VID7540 DBK123 DBK124 VID7810 DBK148 | 1.55 1.55 1.55 1.55 1.76 1.76 1.76 1.76 1.76 |
| VID29 F VID30 F VID30 F VID31 M VID32 M VID33 M VID34 VID34 L VID35 VID36 M VI | RMOTV1008 NIDL0006 NIDL0005 NIDL0004 | Reel motor VC9700 Idler VC387H etc Reel idler VC9300 etc Idler wheel VC2300 | 310mm | | 17.95 1.75 1.85 2.15 | VTC 5000.5150 VTC 6000 VTC 6000 VTC 5300 VTC 5400 VTC 9500 VTC 9306 VTC 9350 VTC M10*11/20 VTC M10*11/20 VTC M10*11/20 | SANYO VID7807 VID7807 DEK105 DEK105 DEK106 VED75333 DBK104 DBK104 | £1.19 £0.70 £0.76 £1.76 £0.78 £2.66 £2.66 | SLT 7 ME SLT 7 MER V 55/57 V 66/67 V 7540 V 8600 V 5250 V 5280 V 5475 | DBK100 DBK100 TOSHIBA VID7543 VID7540 DBK123 DBK124 VID7810 | 1.55 1.55 1.55 1.0.91 1.76 1.76 1.76 |

NEW IN STOCK, A LARGE RANGE OF SLIMLINE REMOTES.
JUST SUPPLY MAKE, MODEL & PART NO. IF POSSIBLE
FOR AN IMMEDIATE QUOTE. AVERAGE PRICE £18.00

NEW FAX NUMBER 0902-29052 Full list available with order or SAE please 9" × 4"
Telephone D902 - 712083
(24hr. answering machine for Access & Barclaycard users)

Prices subject to alteration without notice Stock queries by post only For quantities of 100+ per line - Please For quantities of 100+ per line - Please Forest Tombour Stock of Special Quote - Dorders from Govt Institutions, Schools, Nationals etc., accepted with official order. All goods should be delivered within 4 working days.

REGISTERED OFFICE: THE COACH HOUSE, MUXTON LANE, TELFORO * MAIL ORDER - CALLERS STRICTLY BY APPOINTMENT

Ferguson's SRA1 Satellite TV Receiver

J. LeJeune

The SRA1 was launched by Ferguson for reception of the Astra satellite's transmissions. Previous Ferguson satellite TV equipment had been designed for use with the lower-power transmissions from the Eutelsat/Intelsat craft. Reception from these calls for a fair-sized dish to provide an adequate signal-to-noise ratio with the techniques available about three years ago when most receivers were designed.

Construction of the SRA1 is simple. A single PCB carries everything apart from a regulator chip which is bolted to the metal cabinet. The PCB is fitted to a metal tray that forms the unit's base and back panel. A moulded Perspex fascia forms the front, and a sheetmetal top cover with five screws holds the whole assembly together.

Rear panel connectors include a u.h.f. aerial input socket, an r.f. output socket and two scart connectors. One of the latter is for coupling to a scart-equipped TV receiver, the other to provide a link with a descrambling unit. An F socket is used for the input from the LNB. There is no power switch and there are no front-panel controls. An infra-red remote control system is used for all commands. There are some variations: for example some units have filament lamps instead of LEDs for front panel indication, and in some units all the power regulators are on the one printed panel. It's understood that the unit is built for Ferguson by Pace Electronics.

A block diagram of the SRA1 is shown in Fig. 1. Microcomputer chip IC4 controls the unit. One of IC4's functions is channel selection, which involves setting the correct polarity, audio frequency and contrast level, using programmed-in instructions from the EEPROM IC3. There are separate video amplifier chains for the PAL and MAC signals, with provision for MAC decoding and for descrambling. The audio signal is detected by a phase-locked loop system. This is tunable over 5-8MHz. The unit is for monophonic sound only.

On-screen graphics to indicate the status of the receiver and permit changes to be made can be summoned by remote control. The graphics generator IC9 must be synchronised to the incoming video of course – this is done by the sync separator circuit.

The mains transformer has three secondary windings that feed bridge rectifiers. These are followed by static regulators (four) that provide 5V, 12V and 18V supplies. With this arrangement the unit may be found to run on the hot side, but given adequate ventilation no problems should arise. Indeed it's an achievement for so much to be packed into a small, neat box. Units that employ filament lamps seem to run warmer than those with LED indicators. On standby however most SRA1s run only pleasantly warm. Each secondary winding on the transformer is linked to the associated bridge rectifier via a fusible resistor to provide protection. The primary winding seems to be unfused, so fit a 2A fuse in the mains plug to be really safe.

With its Marconi LNB and a 70cm dish the receiver is capable of providing excellent results – all Astra channels are free of sparklies here in the North Midlands. The r.f. circuitry is contained within a tinplate box which is called the satellite tuner. This is controlled by a phase-

locked loop in the SAB3035 CITAC chip IC5. The channel tuning data is stored in IC3, being read out by IC4 on command from the remote control system. IC4 passes the 15-bit data to the CITAC chip IC5 where it's stored in a buffer stage. The tuner's local oscillator frequency is divided by 256 in a prescaler within the tuner. This divided down signal is applied to a 15-bit counter within IC5, via a gating circuit that's opened every 6.4msec (4MHz/25,600) for a period of time determined by the Time Reference counter. A comparator circuit then compares the counted-down local oscillator signal and the contents of the buffer, producing an error voltage which is used to adjust the tuning until the error falls to zero. The tuner also contains the phaselocked loop demodulator, which appears to work at around 470-480MHz as some patterning can occur on chs. 21 and 22 when a TV set is operated with its own loop aerial or a set-top aerial within about a metre of the SRA1.

Once the required channel has been tuned in the digital tuning system is bypassed and a.f.c. from pin 11 of IC5 takes control. If drift in the LNB's local oscillator (10GHz) or the SRA1's tuner exceeds the capture range of the a.f.c. the digital tuning system is reactivated until correct tuning is restored.

The demodulated video and audio/teletext subcarriers are passed to two video amplifiers, one for PAL and one for MAC. The MAC video amplifier handles the full video spectrum from the demodulator. The PAL video signal is pre-emphasised at the transmitter, so deemphasis is required in the PAL video channel. In addition a gain-controlled amplifier is included in this channel, the gain being adjustable in three pre-set steps which are programmed in along with the tuning data and audio carrier frequency during the setting-up procedure. The gain control system is shown in Fig. 2 – its effect is to adjust the contrast level. This is done by adding extra resistors in parallel with R124, Q30's emitter resistor. Selection of these extra resistors is carried out by two switches in IC7 (4053), under the control of inputs from the CITAC chip IC5. The PAL signal is then filtered to remove the subcarriers and fed to the video selector in IC2. A further video amplifier and clamping circuit restore the d.c. level. The video signal is then passed through another switch (IC8, another 4053) which takes care of graphics insertion, after which the signal passes directly to the modulator.

The audio carriers are tapped from the buffer amplifier that follows the tuner. A single broadband transistor amplifier stage couples them to the phase-locked loop audio detector in IC1. The system can handle carriers in the range 5-8MHz. IC1, type XR215CN, contains a voltage-controlled oscillator and an operational-amplifier comparator circuit. The incoming f.m. signal is fed to one input of the comparator and the VCO's signal to the other. Differences in the frequency and phase of the two inputs produce an error output – this is the detected audio. Tuning to the required subcarrier is accomplished by setting the VCO's frequency so that it coincides with the centre-frequency of the required subcarrier. The control voltage for this purpose is

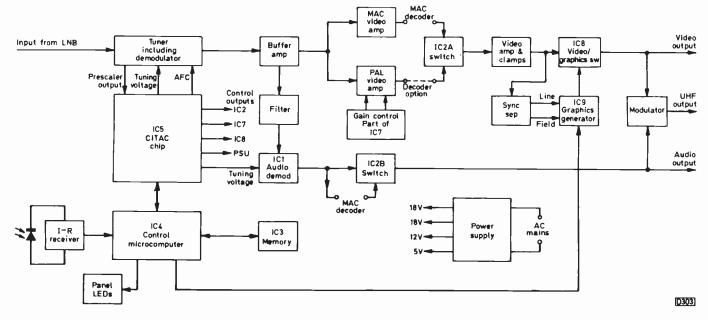


Fig. 1: Block diagram of the Ferguson SRA1 satellite TV receiver.

supplied by the CITAC chip IC5.

The detected audio from pin 8 of IC1 is buffered by an emitter-follower and is then passed to the decoder socket and to the audio selector switching in IC2. The output from this switch is passed to the modulator and to the TV/VCR scart socket.

Setting Up

The modulator contains mixing facilities for terrestrial u.h.f. TV signals. Its output is factory preset to ch. 38 but this can be altered by means of a rotary control on the rear panel.

A nice feature is the set-up signal, which is like that provided by most VCRs. This is of considerable help in the initial stages of installation and in basic fault diagnosis.

The on-screen graphics are another aid to installation. They are produced when SETUP, 1, 4, 7 on the remote control handset are pressed in quick succession. The graphics show the downlink frequency, polarity, audio frequency log (frequency is not displayed directly), contrast setting, decoder type and A/V source choice. You end the setup sequence by pressing both store buttons together twice. Although the receiver is preprogrammed on delivery, it may on occasions require tweaking in order to cater for i.f. variations with particular LNBs. This may occur on initial installation or

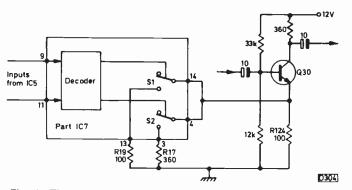


Fig. 2: The contrast control system. S1 and S2 open gives minimum contrast, S1 open with S2 closed gives medium contrast, S1 closed with S2 open gives maximum contrast.

when either the receiver unit or the LNB is changed.

A tuning frequency error may introduce sparklies and/ or sound birdies. By pressing SETUP, 2, 5, 9 and using the up and down arrow keys the error can be eliminated, leaving sparklie-free pictures and sound free of background burbles. Pressing both store keys together once removes the graphics and stores the setting. When experimenting with the unit I found that SETUP, 3, 6, 9 results in the receiver sweeping through the band. Pressing N restores everything to normal.

Performance

The SRA1 gives a good account of itself once it has been set-up properly and provided the ventilation is good. Other points worth care are the F connectors at the receiver and the LNB. I found that the best way to ensure a watertight connection at the LNB is to fit a three-inch length of shrink-fit sleeving over the F connector and then apply heat from a good hairdryer or an electric paint stripper. The effort is worthwhile and this system has withstood some heavy downpours of rain. At the receiver end it's as well to use a good-quality F connector that can withstand movement of the receiver unit for cleaning: the crimped-on type is recommended. In my own installation I use an F connector to Belling-Lee adaptor which is of sturdy construction and facilitates removal of the unit for any reason.

The infra-red remote control system has a good range and is fast. It is however affected by line-frequency radiation from some TV sets. There's a small modification to cure this. Remove the outer case from the receiver to gain access to the infra-red detector unit – it's in a small tinplate box at the right-hand front end of the PCB. Then solder two small pieces of thin wire vertically across the rectangular opening at the front of the box. This is all that's necessary – and from experience it works!

Had the SRA1 been equipped for stereo sound it would have made the perfect addition to any domestic home-entertainment installation. For the average home with TV as the major source of entertainment it is nevertheless a neat and simple-to-use satellite TV receiver.

Service Bureau

Requests for advice in dealing with servicing problems must be accompanied by a £2 cheque or postal order (made out to IPC Magazines Ltd.), the query coupon and a stamped addressed envelope. We can deal with only one query at a time. We regret that we cannot supply service sheets nor answer queries over the telephone.

GRUNDIG CUC2401 CHASSIS

There is no sound despite replacing the TBA130 chip in the sound section. The circuit is not very clear, with its SDA and SCL lines.

SDA and SCL are the serial data and clock lines in the I2C bus that distributes control and command information around the chassis. Inject a signal at pin 8 of the TDA1905 chip IC365. If there's no response, check that the supply voltage is present at pin 2 and that, with the set switched off, you get a crackle from the speaker when an ohmmeter is connected between pin 1 of the chip and chassis. If so the chip is suspect. If the audio channel is live from pin 8 of IC365 it may be that the sound is being muted inside the TBA130 chip. This is governed by the data on the SDA line from the microcomputer chip IC2800.

TAPE BACK-TENSION

We understand that tentelometer readings can be converted to cassette gauge (JVC PUJ48076) readings by multiplying the former by three. This works for the Panasonic NV333/366 but doesn't work out for many service manuals that give both tentelometer and cassette gauge figures. This makes us wonder whether to use the calculation for any tentelometer readings regardless of VCR make.

Torque is tension multiplied by the radius of the reel. Thus you can multiply by three only if there's 3cm of tape on the reel. With 2cm of tape, multiply by two, etc.

FERGUSON 3V35/JVC HRD120

In a VCR Clinic item some time back it was reported that failure to record the sound could be cured by changing the oscillator transistor Q8 from type 2SD638R to type 2SD638S and adding a 5.6nF capacitor across C48. The 2SD638S does not appear to be available however – JVC supply the original 2SD638R.

We understand that there was a batch problem with the original 2SD638R transistors. Provided the capacitor modification is carried out the 2SD638R transistors now being supplied work correctly.

AMSTRAD VCR4600 Mk II

We have two of these machines with the same intermittent fault – it may not occur for days. In the fault condition the rewind and fast forward functions don't work. When selecting either of them the arrow indication on the display flashes as normal but there's no tape movement and after a couple of seconds the machine goes into standby off – the function switch has to be pressed again. In the fault condition play and record are o.k. I've noticed that when the fault is present the reel brake is not disengaged. Disengagement is activated by the small loading motor via levers and cogs. It seems that the trouble is due to this motor not being activated for long enough – its on time is definitely shorter. Presumably the solution is a new loading motor.

Before replacing the loading motor check for friction in the mechanism it drives, for slippage in the loading belt and for incorrect positioning of or faults in the loading switch at CN-E.

FERGUSON TX10 CHASSIS

There are vertical striations on the left- and right-hand sides of the screen. Those on the left are evenly spaced, 0·3in. apart, and after some seven lines become very faint. Those on the right-hand side are not so even. The fusible resistor R833 that damps the line linearity coil is intact.

Though R833 is intact it's worth making an ohmmeter check – it could have gone high in value or open-circuit internally. Also check that the c.r.t.'s Aquadag coating is properly earthed. If these points are in order, check C831 (scan coupling) by substitution. If necessary, then check C833 and C726. If the problem persists, examine the 12V line for the presence of line-rate pulses. IC621 or C612 could be responsible if such pulses are present.

HITACHI CPT2174 with GEC V4008

When prerecorded tapes are played there are bent verticals at the top of the screen despite using the AV buttons. The verticals are virtually straight with the machine's own recordings.

With this Hitachi set the AV mode is obtained by selecting programme 11 or 12. Check that the collector of transistor Q1103 goes low under these circumstances. If so the time-constant of IC501 is being altered to suit the VCR signals and suspicion falls on the VCR for excessive timing jitter. Check the head drum bearings, free-running of guides etc.

RANK T26 CHASSIS

The top half of the screen is blanked out. All we get is about four inches of picture at the bottom of the screen. Replacing the field output i.c. made no difference.

First disconnect R51 on the signals panel. If this restores a full picture, suspect D10 (ZF22P) and D12 (1N4148) on this panel. Also if necessary check D13 (1N4148). If removing R51 makes no difference turn attention to the timebase panel, particularly the diodes and electrolytics associated with IC2 (TDA2653).

TOSHIBA V83

This machine goes into the stop mode very intermittently during play or record – the fault can occur with manual or timed recordings. The clock display is not affected but any programming is lost. When restarted the machine runs perfectly, often for several hours.

There are two known causes of this trouble. If the mode switch is the original one it could well be responsible. Otherwise the reel motor is suspect. First check the mains connection, plug and wall socket.

TEST CASE

323

Each month we provide an interesting case of TV/video servicing to exercise your ingenuity. These are not trick questions but are based on actual practical faults.

It's autumn and the lads in the sales department wait with bated breath for the rush of customers, allegedly preoccupied during the summer with gardens, holidays and worries about high mortgage rates, to pour through the doors to buy Astra receivers. Meanwhile the service department continues to look after those already sold. Now that most of the initial production bugs have been sorted out the problems that crop up don't seem to be too difficult to cope with: faulty stabiliser chips in the power supplies, the odd signal or control chip or tea spilt into a remote control unit – there's nothing new under the sun, as they say . . .

David the Downtrodden was given the job of going out to attend to Mr. Todd's satellite TV receiver. He'd complained about sparklies. On arrival at the Todd residence David found that the pictures were indeed much marred by sparklies. He then discovered that the receiver was not properly tuned. Each channel required a dab on the tune-down key. After treating all the available channels in this way, and committing the tuning points to memory, David departed for the next call in a swirl of leaves.

David's face fell when, next morning, he was asked to return to Mr. Todd and his satellite TV outfit. The call had come before eleven o'clock: same trouble, and the customer angry. On site, Mr. Todd watched as David again retuned the satellite box. Once more the signals came in nicely with adjustment of the tuning controls. David then removed the set's outer case and inspected the PCB carefully, looking in particular for poor joints. He was unable to get into the heavily screened tuner/i.f. section but resoldered some joints on the mother board, beat a tattoo on the entire assembly with a screwdriver (while Mr. Todd was answering the doorbell!) and, finding no drift, pronounced the receiver fit and well. Mr. Todd was not convinced but, with the set working and correctly tuned, there was little he could do especially as David had suggested that the problem could have been due to poor ventilation in the tuner's original position on top of a warm VCR. They'd found another

Experienced Test Case readers could probably write the next bit for themselves. Of course the tuning drift continued, the annoyance being mitigated to some extent by the fact that Mr. Todd had learnt how to chase the drift up and down with the tuning controls, having watched David do this. Mr. Todd was free in his opinion of David and the receiver when he next contacted the shop manager about the problem. Arrangements were made to collect the set and bring it back to the workshop during three days when Mr. T. would be away on business. David was pleased to hear about this: no more carpet confrontations.

When the receiver came into the workshop it was immediately found to need slight retuning. Once this was done the receiver remained spot-on all day. The tuning was still correct next day when the set was switched on from cold, with sparkly-free test cards, Lifestyle and the rest. What to do next? Cool it with freezer, heat it with the Pifco hairdryer, then knock seven bells out of it with a heavy-handled screwdriver. In the face of this thermomechanical onslaught the receiver acquitted itself well, only drifting a mite when its innards were at egg-frying temperature. The service department was wasting its time. Why?

ANSWER TO TEST CASE 322 - page 945 last month -

When you stay at the Bay View guest-house, in the first-floor front room, you can now have the benefit of clear and pure colour pictures from the 20in. Mitsubishi set that played the leading role in last month's puzzle. It had been afflicted with a localised area of impurity that wouldn't go away despite repeated degaussing, and remained when the scan yoke was changed. The picture tube was thus suspected, but a new one wouldn't have cured the trouble either!

The affected area of the picture was right beside the loudspeaker, and the fault had started when a sound fault had been cured. These two factors had sent the homeward-bound bench engineer back to the workshop, an unprecedented happening. Sure enough he found that the loudspeaker had been replaced with the wrong type. Whoever had last serviced the set had fitted a speaker from some hi-fi system. It had a huge magnet and a proportionately huge stray magnetic field.

The speakers fitted in colour TV sets have a low external magnetic field so that they don't upset the beam-landing in the c.r.t. With the right speaker fitted the purity was restored and good sound was maintained. Luckily for Bay View and Reg!

QUERY COUPON

......................

Available until 15th November 1989.
One coupon, plus a £2 (inc. VAT) cheque or postal order, must accompany EACH PROBLEM sent in accordance with the notice on page 48.

TELEVISION NOVEMBER 1989

Published on approximately the 22nd of each month by IPC Magazines Limited, King's Reach Tower, Stamford Street, London SE1 9LS. Filmsetting by Trutape Setting Systems, 220-228 Northdown Road, Margate, Kent. Printed in England by the The Riverside Press Ltd., Thanet Way Whitstable, Kent. Sole Agents for Australia and New Zealand – Gordon and Gotch (A/sia) Ltd.; South Africa – Central News Agency Ltd. Subscriptions: Inland £20, overseas (surface mail) £24 per annum, payable to Quadrant Subscription Services Ltd., Oakfield House, Perrymount Road, Haywards Heath, Sussex RH16 3DH. "Television" is sold subject to the following conditions, namely that it shall not, without the written consent of the Publishers first having been given, be lent, resold, hired out or otherwise disposed by way of Trade at more than the recommended selling price shown on the cover, excluding Eire where the selling price is subject to currency exchange fluctuations and VAT, and that it shall not be lent, resold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever. ISSN 0032-647X.

VISIONS LONDON

EX-RENTAL VIDEO & TV WHOLESALER

UNIT 4, RAINSTAR IND. ESTATE, ELEY ESTATE, NOBEL ROAD, EDMONTON N18 0AA (off A406)

2 minutes from Ex-Ferguson Spares/Service Depot

Contact: Tony or Neil

01-807 7476



WAREHOUSE PACKED WITH FULL RANGE OF THORN & GRANADA STOCK

APPROVED THORN DISTRIBUTOR

UNBEATABLE PRICES

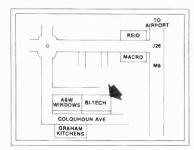
| TX9/10 BASIC | £30.43 |
|---------------------|---------------------------------|
| | £53.91 |
| JAPANESE From | £25.00 |
| KT3/K30/G11 | UNBEATABLE LOW PRICES |
| 3V30, in lots of 10 | £65.00 |
| DELIVERY ARRANG | GED Exclusive of VAT & Handsets |

BI-TECH SCOTLAND

UNIT 9, COLQUHOUN AVENUE, HILLINGTON INDUSTRIAL ESTATE, GLASGOW GS2 4BN

Contact: Jack Swan

041-883 2610



YOU DON'T NEED TO CHECK MATE!

TELEPRICE

LIMITED

HAVE THE UK'S FINEST SELECTION OF IMMEDIATELY AVAILABLE QUALITY EX-RENTAL TV'S & VIDEO'S — RING OUR LOCAL MANAGER FOR DETAILS



FARNBOROUGH WAREHOUSE



CLIFF PARSONS 0252 540814

7/8 KINGSGROVE INDUSTRIAL EST. INVINCIBLE ROAD FARNBOROUGH HANTS, GU14 70S



AVONMOUTHWAREHOUSE



KARLA REALE 0272 235093

5 PORTVIEW ROAD AVONMOUTH BRISTOL BS11 7LQ





1AN DORAN 0505 29284

1a LYON ROAD LINWOOD INDUSTRIAL ESTATE LINWOOD RENFREWSHIRE PA3 3BO



NOTTINGHAM WAREHOUSE



JOHN JEYS 0602 491385

REAR ENTRANCE, UNIT 7 ORCHARD BUSINESS PARK SANDIACRE NOTTINGHAM NG10 5BP



SUNDERLAND WAREHOUSE



BRIAN CADE 091 523 5554

9A/B 94 CARRMERE ROAD LEECHMERE INDUSTRIAL EST. SUNDERLAND SR2 9TE

AINTREE WAREHOUSE



IAN McCLELLAND 051 530 1285

UNIT 2, RACECOURSE IND. EST.
ORMSKIRK ROAD
AINTREE
LIVERPOOL L9 5AL

ZonePort TV & VIDEO WAREHOUSE

ONE OF SOUTHERN ENGLAND'S FOREMOST TRADE SUPPLIERS

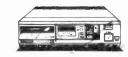
We are one of the South's leading Trade suppliers of top quality ex-rental TV and Videos. A good range held in Philips, JVC, Sony, Toshiba, Hitachi and National Panasonic colour TVs including portables, teletext and remote control models. Now In Stock: Ex-Granada Models, Finlandia/Rediffusion Mk 3, 4 & 4A. Basic, remote & teletext versions.

NEW B GRADE

ASSORTED STOCK
FST TEXT MODELS,
MIDI SYSTEMS, VCR's
(Single & dual speed)
PHONE WHILE
STOCKS LAST

CUSTOMER READY STOCK

We specialise in supplying working stock that has been professionally refurbished to a high standard. Our engineers pay special attention to the cosmetics as well as the electronics, so come to us for competitively priced stock that is *genuinely* ready for your showroom and your customers.





RING OUR HOT LINES NOW!

— *

SPECIAL OFFER
REDIFFUSION TRANSLATOR
NO. 847038
£2.00 plus £3 P&P inc. VAT

BRIGHTON CUSTOMERS

CONTACT MIKE LESEELLEUR

3 (0273) 571672

ZONEPORT

UNIT N2, LONDON ROAD TRADING ESTATE, SITTINGBOURNE, KENT

CONTACT BRIAN MOLLETT

28 (0795) 428166

NORTH EAST AND NORTH WEST ENGLAND

T (0524) 61122

CREWE WHOLESALE TELEVISION

CHESHIRE'S LARGEST WHOLESALERS - OVER 18,000 SQ. FT.

10 MINUTES FROM JUNCTION 16, M6

BAD NEWS — FOR OUR COMPETITORS!

WE HAVE BEEN ESTABLISHED OVER 5 YEARS AND ARE HERE TO STAY!

GOOD NEWS – FOR OUR CUSTOMERS!

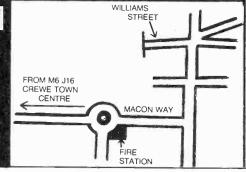
PLENTY OF STOCK AT GOOD PRICES – LOADS ARRIVING DAILY WORKING TV's & VIDEO'S ALWAYS AVAILABLE

CAN YOU AFFORD TO BUY TV'S OR VIDEO'S WITHOUT GETTING A QUOTE FROM US?

CREWE WHOLESALE TELEVISION

Williams Street Warehouse, Crewe, Cheshire.

0270 582924 (2 lines)



Stock items despatched by return

VIDEO HEADS SPECIAL OFFER

FERGUSON AND PANASONIC UNIVERSAL HEADS (3HSSV AND 3HSSN) AT £13.25

| AMSTRAD 3HSSR-VCR7000 (Saisho/Onon) PSF1-VCR4500, 5200, 9000 PSF2-VCR4600, 4700 | \$20.00 |
|--|--|
| FERGUSON 3HSSVA-3V42,44,45,46 etc 3HSSVAP.3V32.HR7655 3HSSAVD.3V48.HRD565 3V48,3V58,3V59,3V65,FV10,FV11,FV12,FV13,FV14,FV20,FV21,FV26 And most other Ferguson | £40.50 £45.00 |
| HITACHI 3HSSHA-VT8000,9000 series 3HSSHB-VT11,33 etc 10078-VT17 etc | £19.00 |
| PANASONIC 3HSSU1N-NV370,380,100/Philips VR6460 3HSSU2N-NV230,470,480,G9,10, G11,G15PX 3HSSU3N-NV470,460 3HSS3N-NV777 330 3HSS4NB-NV770 3HSS4NA-NV366 NVG30,33,40,45,46,130 & most others Panasonics | £33.60 £22.75 £25.00 £35.00 £35.00 |
| SANYO 3HSSSY-VHR1100,1110,1300 3HSS3SY-VHR1500 | £28.90 £46.00 |
| SHARP 3HSSSP-VC9300,9500,9700,381,481 482,483,486 etc 3HSSSP8-VC581,583,651,750 etc VC7000,8000 series (Brass) | 121.00 |
| OTHER MAKES Alba 4000 Fisher FVHP510,520,530,615,710 etc Fisher FVHP510,520,530,615,710 etc Fisher VBS7000,9000 etc Goldstar Universal Hinari VXL 2,4,35 Hinari VXL 2,4,35 Hinari VXL 20H Mitsubishi HS303,304,320,700,310 Saisho VR100,605,705,805,905 Samsung Universal 2 Head Toshiba V71,81, etc Toshiba V93 | £33.75 £23.00 £23.00 £23.00 £20.00 £23.00 £35.00 £24.25 £25.50 |
| ASK FOR VIDEO HEADS NOT LISTED |) |
| | |

The above heads are replacements. For originals please ask for quotations.

| TR | ANS | ISTORS | |
|-----------------|-------|-----------------------|-------|
| BC107B | £0.10 | BU407 | |
| BC108B | | BU426A | |
| BC147A | | BU500 | |
| BC172C | | BU508A | |
| BC214A | | BU508D | |
| BC214B BC237 | | BU536 BU806 | |
| BC238 | | BU806 BU807 | |
| BC308B | £0.07 | BUT11 | |
| BC327-25 | | BUX84 | |
| BC328 | | TIP29 | |
| BC337 | | TIP31 | |
| BC547A | | TIP32 | |
| BC548 | | TIP41 | £0.27 |
| BC549 | | TIP42 | |
| BC559B | | TIP42C | £0.40 |
| BD137 | | TIP112 | |
| BD237 | | 2SA1102 | |
| BD238 BD243C | | 2SB1016 | |
| | | 2SC1413A 2SC 2027 | |
| BD244 BD244C | | 2SC2331 | |
| BF195 | | 2SC2577 | |
| BF196 | £0.07 | 2SC2958 | |
| BF197 | | 2SC3153 | |
| BF198 | | 2SC3678 | |
| BF259 | £0.22 | 2SD639 | |
| BF458 | £0.22 | 2SD869 | £3.00 |
| BF459 | | 2SD898B | |
| BF469 | | 2SD1047 | |
| BF471 | | 2SD1265 | |
| BF472 | | 2SD1275 | |
| BU108 | | 2SD1397 | |
| BU126 | | 2SD1398 | |
| BU208 BU208A | | 2SD1426 | |
| BU208D | | 2SD1497-02 | |
| BU208 (Toshiba) | | 2SD1497-06 | |
| BU3 26A | 20.75 | Ask for Transistors I | |
| | | | |

| INTEG | RATE | ED CIRCU | ITS |
|--|---|--|----------------|
| AN247 AN3821K | £4.50 £6.75 £7.50 £3.95 £2.60 | TA7270P TA7271P TA7609P TA7628P | £2.50 |
| | £7.50 | TA7609P | £2.70 |
| AN5132 | £3.95 | TA7628P | £2.40 |
| AN3822 AN5132 AN5521 AN5521 AN5760 AN5900 AN6326 AN6332 AN63341 AN63344 AN6344 AN6360 AN6360 AN6362 AN63671K | \$2.00 | IA/2//UP IA/26/UP IA/76/09P IA/76/09P IA/76/28P IA/76/29 IBA/12/0S IBA/530 IBA/530 IBA/540 IBA/540 ICA/650 ICA/640 ICA/650 ICA/650 ICA/660 IDA/10/10A IDA/10/13A IDA/10/13A IDA/10/13A IDA/10/13A IDA/10/13B IDA/11/13B IDA/11/13B IDA/11/13B | £0.50 |
| AN5900 | £1.50 | TBA530 | £1.00 |
| AN6332 | €4.40 | TBA800 | €0.85 |
| AN6341 AN6344 | £2.75 | TBA820M TBA920S | £0.45 |
| AN6346 | £4.50 | TCA640 | £3.75 |
| AN6360 AN6362 | £3.75 | TCA650 | £3.95 £3.50 |
| AN6387 | £5.50 | TDA1010A | £1.10 |
| AN6677 | £5.25 | TDA1013A | £1.90 |
| AN6387 AN6671K AN6677 AN7169 BA718 BA5102 BA5406 BA6109 BA6209 BA6219 BA6238A BA6302A BA63004 | . £3.50 | TDA1035 | £1.90 |
| BA5102 | £2.45 | TDA1044 | £2.50 |
| BA5406 BA6109 | £2.50 | TDA1044U | £1.50 |
| BA6209 | €3.20 | TDA1082 | €3.50 |
| BA6238A | £1.95 £1.95 | TDA1170S TDA1180 | £1.20 |
| BA6302A | £1.80 | | |
| BA6304 BA6305 | £1.70 | TDA1412 TDA1510 | £1.00 |
| BA6305 HA13008 HA11714 HA11715 | . £2.00 | TDA1510 TDA1512 TDA1515A | £1.00 |
| HA11715 | £3.30 | TDA1670A | £2.60 |
| HA12005 | £3.80 | TDA1701 | £3.00 |
| HA11715 HA12005 HA13001 HA13008 HA13403 HA1377 LA4125 | £4.50 | TDA1870A | £2.60 |
| HA13403 | £4.00 | TDA1940 | £1.80 |
| | | TDA2003 | £1.30 |
| LA4140 LA4192 | £0.70 £1.70 | TDA2005 TDA2030 | £1.70 |
| LA4192 LA4445 | \$2.50 | TDA2270 | £2.20 |
| LA4445 LA4461 LA7520 LA7800 LA7801 LA7802 M51393 | . £1.80 . £3.25 | TDA1515A TDA1670A TDA1670A TDA17701 TDA1770 TDA1870A TDA1940 TDA1950 TDA2003 TDA2005 TDA2030 TDA2270 TDA22510 TDA2510 TDA2510 | £4.30 |
| LA7800 | £1.50 | TDA2540 TDA2560Q | £1.00 |
| LA7802 | £1.23 | TDA2562A | C2 75 |
| M54543 | £1.75 | TDA2576A | £2.90 |
| M54544L MC1330P | £1.85 | TDA2576A TDA2577A TDA2578A TDA2581/Q | 22.80 |
| MC1330P MC1458 use UP | £2.95 01458 | TDA2581/0 TDA2590 | £1.55 |
| MC1458 use UP MDA2061 | €3.50 | TD 42502 | ലവ |
| SAA1293 | £7.00 £3.75 | TDA2600 TDA2611A | £1.00 |
| STA401A STA441C STK043 ST0029 STK441 STK72B STK4141 STK5322 STK5325 STK5325 STK5331 STK5332 STK5335 STK5336 STK5336 STK5345 STK5421 STK5421 STK5421 STK5421 STK5421 STK5451 STK5421 STK5451 STK5451 | £3.00 | TDA2611A TDA3190 TDA3330 | £0.95 |
| ST0029 | £10.00 | TDA3541 | £2 25 |
| STK441 | £10.50 | TDA3560 TDA3561 | £3.40 |
| STK4141 II | €6.90 | TDA3562A | €2.80 |
| STK414211 STK5322 | £10.00 £6.50 | TDA3565 TDA3571BQ | £3.00 |
| STK5325 | €5.50 | TDA3562A TDA3565 TDA3571BQ TDA3650 TDA3651 | £3.50 |
| STK5331 | £3.50 | TDA3651AQ | £2.50 |
| STK5338 | 26.00 | TDA3651AQ TDA3652 TDA3653 | £2.50 |
| STK5421 | £6.50 | 111)43654 | C2 8B |
| STK5422 STK5451 | . £5.00 £5.50 | TDA3810 TDA3950 TDA4500 TDA4501 | £2.90 |
| STK5471 | £5.25 | TDA4500 | £3.80 |
| STK5481 STK5730 | £4.75 £5.25 | TDA4505 | £3.95 |
| STK6962 | £3.20 | TDA4600 | £2.60 |
| STK7308 | £5.75 | TDA4610 | £4.50 |
| STK7309 STK7348 | £5.50 | TDA8180 | £7.00 |
| STR440 | £5.00 | TEA1014 | £4.45 |
| STR441 | £4.75 | UPC122H | £2.75 |
| STR1096 | 23.60 | UPC1238V | £2.10 |
| STR5412 | £5.95 | UPC1363 | £1.90 |
| STR6020 | £4.90 | UPC1365 | £3.50 |
| STR58041 | €6.75 | UPC1378H | \$2.00 |
| TA7205AP TA7227P | £1.25 | UPC1382 | £1.50 |
| TA7240 | \$2.50 | UPC1420A | €7.00 |
| STK5730 STK5962 STK699 2 STK7308 STK7309 STK7348 STR440 STR441 STR454 STR454 STR454 STR454 STR45112 STR6020 STR50103A STR50103A STR58041 IA7205AP IA7227P IA72240 IA7241 IA7267P | £2.50 £2.80 | TDA4505 TDA4600 TDA4601 TDA4610 TDA4610 TDA8180 TDA8180 TDA9530 TEA1014 UPC122H UPC1230 UPC1361 UPC1363 UPC1363 UPC1377C UPC1377C UPC1377C UPC1384 UPC1382 UPC1384 UPC1384 UPC1384 UPC1384 UPC1384 UPC1384 UPC1586 Ask for ICS no | ot listed |
| | | | |
| | DIO | DES | |
| BY127 BY164(SKB 2/02) | £0.08 | SKE2G2/02 SKE5F3/10 SKE2G3/04 SKE4F1/04 SKE4F1/06 SKE1M15 SR 2M | £0.75 |
| BY164(SKB 2/02) BY179(SKB 2/08) | £0.85 | SKE2G3 04 | £1.25 |
| BY223 BYX10 BYX55/600 | £0.21 | SKE4F1 06 | £0.40 |
| BYX55/600 KBL08 Bridge Re | £0.25 | SKE1M15 SR2M | £0.67 |
| SKE1/02 | €0.45 | Ask for Diodes | not listed |

SG264A

State value

VIDEO MOTORS

| REEL MOTORS Ferguson 3V29.30 Onginal Ferguson 3V58.59,65, FV10,11,12,13,14,20,21,22 Ferguson FV260 Hitach: 8000,8300,8500 Sanyo VTC5000,5150,5400,5300,6500 Sharp VC9300,9500 etc, Onginal Panasonic NV333,366 Original All other Panasonics | £16.00 £13.50 £7.05 £7.50 £15.90 £13.20 |
|--|--|
| DRUM MOTORS Ferguson/JVC (Mechanical models) Sharp 7000 series Original All Panasonic Original | £24.63 |
| CAPSTAN MOTORS Ferguson 3V35,36 Original Ferguson 7V2C (Mechanical models) Hitachi VT11 Original Hitachi VT32 Original Hitachi VT64 Original Hitachi VT69000 series Original Hitachi VT9000 series Original Sharp VC7000 series Original | £21.45 £30.00 £32.00 £19.75 £34.50 £34.50 |
| MODE CONTROL MOTORS Ferguson 3V42, 43, 44, 45, 48, 49, 52, 53 Ferguson 3V58, 59, 65, FV10, 11, 12, 13, 14, 20, 21, 22, 26 | £6.00 |

IDLER ASSEMBLIES

| IDLER ASSEMBLIES | | |
|--|---|--|
| FERGUSON Take up Clutch (Mechanical models) 3V29:30 Take up Idler 3V29:30 Take up Clutch 3V29:30 Teel Idler 3V35 Reel Idler 3V35 Reel Idler 3V35,638,39 Take up Clutch 3V58,59,64,65,FV10,11,12,13,14 Idler Arm | 53 53 | 20 10 50 |
| FISHER PVHP615 Ider Assembly Onginal PVHP615 Gear Idler Assembly PVHP905 910 Gear Idler Assembly Original PVHP520330 Idler PVHP520330 Idler PVHP5 Ider Assembly Original | £4. £5. £3. | 35 .00 .00 |
| HTACHI VT11,33 etc. Original Idler Arm VT11,33 etc. Original Idler Arm VT9300,9500 etc. Play Idler VT9300,9500 etc. Fle Idler VT9300,9500 etc. Fle Idler VT8000,8500 etc. Fle Rew Idler VT8000,8500 etc. Fle Rew Idler VT8000,8500 etc. Fle Rew Pulley VT8000,8500 etc. Fle Rew Pulley VT8000,8500 etc. Clutch Assembly | ជធាជាជាជាធាធាធាធាធាធាធាធាធាធាធាធាធាធាធា | 75 65 95 95 95 00 70 |
| PANASONIC (All Original) NV3701 dler Arm Unit VXP0521 Gen NV8600, 8610 Play Idler VXP0243 NV332, 777, 788 Idler Unit VXP0463 NV500, 888 Idler VXP0515 NV333, 366 Idler Arm 2 Unit VXL0997 NV8400, 8600, 8610 etc. VXP0245 NV333, 366 etc. Idler VXP0401-NV700, 720/ Idler VXP0344 NV2000, 3000 Play Idler VXP0331-NV2000 Idler Unit VXP0329 Back Tension Bands All Panasonic Maintenance Kits QUOTE PANASONIC PART NO FOR PARTS NOT LISTED | 10. 78. 10. 20. 30. | 95 00 50 80 00 80 |
| SANYO (All Original) VTC5000,5150,6500 Idler Roller Assembly VTC5000,5150,6500 Reel Drive Pulley Unit | £2 £5. | 25 00 |

LINE OUTPUT/MAINS **TRANSFORMERS**

| D . 400 | 00 - 0 |
|--------------------------------------|----------|
| Decca 100 | |
| ITT CVC 20 | £9.75 |
| ITT CVC 25,30,32 | C8 50 |
| ITT Compact 80 series | £16.75 |
| | |
| ITT CVC40 | |
| ITT 1204 | £13.60 |
| Fidelity All models up to 20" ZX3000 | £10.50 |
| Fidelity 22" ZX3000 | €24.50 |
| Fidelity 22 ZA3000 | . 124.00 |
| Fidelity Panel for 20" ZX2000 | |
| Hinari CT4,5 & TVA1 | . £20,00 |
| Philips KT3 | £12.50 |
| Rank Bush T20A | €9.20 |
| There 4000 4004 4004 | 19.20 |
| Thorn 1690,1691,1694, | |
| 1615 | £7.10 |
| Thorn TX100 | £16.90 |
| Thorn TX90 Mains Transf | £16.95 |
| | |
| Ferguson 3V35 Mains Transf | |
| Ferguson 3V44/45 Mains Transf | |
| ALE SONY LINE OUTPUT TRANSFORMERS | POA |
| UNIVERSAL TRIPLER | |
| UNIVERSAL TRIPLER WITH FOCUS POT | CO 00 |
| | |
| THORN TX10 FOCUS UNIT KIT | £8.50 |
| | |

Access & Visa Accepted REMOTE CONTROLS

Ferguson, Grundig, ITT, Philips, Pye, Sony and Hitachi. Various models TV & Video From £13.50

SONY REMOTE CONTROL RUBBER PADS. STATE MODEL FOR PRICE

TV ON/OFF SWITCHES

ITT, Philips, Decca, Thom, Fidelity, Grundig, Sony and Hitachi. State model for price.

BELT KITS

Akai, Amstrad, Fisher, Ferguson, Hitachi, JVC, Panasonic, Sanyo, Sony, Sharp and Toshiba. Prices start from £0.55

PINCH ROLLERS

Akai, Amstrad, Fidelity, Ferguson, GEC, Hitachi, ITT, JVC, Mitsubishi, Panasonic, Philips, Sanyo, Sony and Toshiba all at £2.80 except Sharp VC387, 481 483,486,488,496,581,583,585 which is at £3,50 Please note Pinch Rollers for most models for the above mentioned makes are available

OTHER SPARES

| Universal Video Copying Kit \$3.60 Universal Video Copying Kit (Scart) £5.20 Video Cassette Lamp Ferguson with without |
|--|
| plug £0.50 |
| Video Cassette Lamp Sharp, Panasonic, Amstrad, |
| Hitachi £0.50 |
| Video Cassette Lamp Sharp 9300 etc. with plastic |
| moulding £0.75 |
| Universal Cassette Lamps 40mA 60mA £0.50 |
| CRT Anode Caps £0.60 |
| Video Tape Splicing Kit £6.95 |
| Hitachi TV Frame Module HM6251 £5.50 |
| Cassette Housing Assembly Ferguson 3V35, 36, 38, |
| 39,42, 43,44 £25.25 |
| Cassette Loading Roller Assembly 3V23,3V31, |
| 3V32 £3.50 |
| Philips 1.2V Back up Battery £2.55 |
| Philips 2.4V Back up Battery £5.25 |
| Degaussing Positor Blue £1.55 |
| Degaussing Positor White £1.30 |
| Cassette Housing Assembly Hitachi VT11 £19.50 |
| End Sensor for Hitachi VT63,64,65 (Pair) £2.75 |
| Cassette LED Sensor for Panasonic etc £1.60 |

* * *

SERVICE AIDS - SWITCH CLEANERS, HEAD CLEANERS, FOAM CLEANERS, SILICON GREASE, DESOLDERING **BRAID, INSULATING TAPE** ETC. NOW AVAILABLE.

*** * ***

RESISTORS, ELECTROLYTIC CAPACITORS, FUSES ETC. NOW IN STOCK.

* * *

FOR SONY AND PANASONIC **SPARES PLEASE QUOTE** MANUFACTURERS PART No.

* * *

STOCK ITEMS DESPATCHED SAME DAY. MOST OTHERS WITHIN 48 HOURS.

* * *

ORDER FACILITY AVAILABLE FOR AMSTRAD, FERGUSON, G.E.C., HINARI, MATSUI, PHILIPS AND SAISHO.

* * *

SEND FOR PRICE LIST.



Please add £1.00 per order for p&p and then add 15% VAT. 183 ACRE LANE, NORTHAMPTON NN2 8DX. TELEPHONE: (0604) 847800

£9.50

THYRISTORS

OTHERS AVAILABLE

Zener Diodes (a £0.10 each

SHARP

VC9300,9500 etc. Idler VC481,581 etc. Idler

VC481,581 etc. Idler VC9300,9500,481,581 etc. Idler Original



THE RIC MONITOR II

100 WATT SPEAKER KIT £60.00 +£3.50 P&P (pair)

RESPONSE: 55Hz-20kHz BASS POLYMER CONE D: 22cm

DOME TWEETER: 14mm OVERALL SIZE (HWD): 382,252,204mm

RECOMMENDED AMP POWER

10-100 watts per channel The performance stan-dard achieved in this this compact design is distinctively superior to any-thing else available at the price. The drive units used are of sophisticated design and have been carefully integrated with a



Complex Crossover. Stereo performance is exceptionally good with a well focussed sound stage and sharp resolution of detail. Distortion throughout the frequency range is low even at quite high power input and this gives a great sense of dynamic range and openness especially when used in bi-wired

Supplied with:— 2 READY CUT BAFFLES, ALL CROSSOVER COMPONENTS, 2 BASS MID-RANGE, 2 DOME TWEETERS, HOOK UP WIRE, GRILLE CLOTH, SCREW TERMINALS AND SCREWS.

CROSSOVER KIT. To build 2 sets of crossovers £11+£1.75 post. (Featured in Everyday Electronics—May 1989 issue). Reprint Free with Kits

AMPHONIC 125+125 POWER AMPLIFIER



125 watt per channel stereo power amplifier with independent volume controls, professional 19" rack mount and silent running cooling fan for extra reliability.

Output power Output impedance Sensitivity Electronic short-circuit and fuses 220-240V a.c. 50Hz 435×125×280mm Protection Power Chassis dim Weight 10kg approx

£124.99+£7.00 p&p



J.B.L. BOLIVAR COMPONENT SPEAKERS
10' HI-FI BASS UNIT WHAT I'W VOICE COIL, HIGH COMPLIANT, RE-INFORCED, MOULDED PAPER CONE, ROLLED FOAM EDGE WITH A BIG 41/2" MAGNET 611 IMPRODANCE DANCE

£18.73

MID RANGE 1" VOICE COIL, PAPER CONED

WISHIG EDGE FITTED WITH A 31%" MAGNET. 4½" 100W LP AND DO LD ON 6Ω IMPL INCE 4½ TWEET EDGE 2011 MAG £5.33

WEETER 3/4" VOICE COIL, 13/4" CONE WITH FOAM MAGNET, 6Ω IMPEDENCE POSTAGE £4.70 PER ORDER £6.33

52W 2-WAY COMPONENT SPEAKER SYSTEM £3.95

Comprises 8in rolled surround bass unit and 2½ tweeter for In-Car or Hi-Fi use, 4 ohm. *Made by Sanyo*

8 OHM HI-FI COMPONENT SPEAKER £4.95 8in SOUND LAB 60W £12.95 Res freq. 38Hz full range

12in DANTEX 100W £21.75 Res freq. 23Hz bass unit Postage £3.20 each order

* SPECIAL PURCHASE Batteries C size NiCad 2.2 Ah EV £1.98 each 2 Ah EVERY-READY AN220

£1 BARGAIN PACKS **BUY 10 GET 1 F**

Order No.

BP010 Speaker 80 10 watt **RP012** BP013 RP015A

5½7 Speaker 4Ω1 10 watt 6½% Speaker 4Ω1 10 watt 8″×5″ Speaker 4Ω1 6 watt made by E.M.I. 5½″ full range 12 watt 4Ω speaker with matching grill. For small p.a. or in car use.
30 watt, dome tweeter. Size 90×66mil JAPAN made

BP016 6

RP017 3

BP018 BP019 20

BP020 BP021 10

BP022

30 watt, dome tweeter. Size 90 x 66mil JAPAN made 2200 µf can type Electrolytic 25V d.c. computer grade made in UK by PHILIPS 33000 µf 16V d.c. electrolytic high quality computer grade UK made 2000 µf 50V d.c. electrolytic high quality computer grade made in USA 20 ceramic trimmers Tuning capacitors, 2 gang dielectric a.m. type 3 position, 8 tag slide switch 3 amp rated 125V a.c. made in USA Push-button switches, push on push off, 2 pole change over. PC mount JAPAN made 2 pole 2 way rotary switch Hight angle, PCB mounting rotary switch, 4 pole, 3 way rotary switch UK made by LORLIN 3 pole, 3 way miniature rotary switch with one extra position off (open frame YAXLEY type) 4 pole, 2 way rotary switch UK made by LORLIN Mixed control knobs Slide potentiometers (popular values) Stereo rotary potentiometers 100k wire wound double precision potentiometers UK made BP023 BP024

BP025 BP026

BP027 BP028 BP029 BP030

Stereo rotary potentiometers 100k wire wound double precision potentiometers *UK made*Single 100k multitune pots, ideal for varicap tuners *UK made by PHILIPS*UHF varicap tuner heads, unboxed and untested *UK made by PHILIPS*MIST medical to the coordinate of th 6 **BP031**

RP032

BP033

BP034

RP034A 2

OK made by PHILIPS
AM IF modules with diagram
UK made by PHILIPS
AM-FM tuner head modules.
UK made by MULLARD
Hi-Fi stereo pre-amp module inputs for CD, tuner
tape, magnetic cartridge with diagram.
UK made by MULLARD
All metal Cnavial agrial pluss BP034B

All metal co-axial aerial plugs Fuse holders, panel mounting 20mm type **BP035** BP036

BP037 6 RP038

Fuse holders, panel mounting 20mm type JAPAN made
In line fuse holders 20mm type
UK made by BULGIN
5 pin din, 180° chassis socket
Double phono sockets, Paxolin mounted
2.8m lengths of 3 core 5 amp mains flex
Large VU meters JAPAN made
W ministra bulbs wire noded now unter

4V miniature bulbs, wire ended, new untested BP043 BP044 RP045

BP046

4V miniature bulbs, wire ended, new untested Sonotone stereo crystal cartridge with 78 and LP styli JAPAN made Stereo cassette record and play heads JAPAN made 6-0-6 4VA mains transformers, P.C. mount UK made 24V 750mA mains power supply. Brand new boxed UK made by MULLARD OC44 transistors. Remove paint from top and it becomes a photo-electric cell (or P12) BP047 1

BP049 10 becomes a photo-electric cell (or P12)

UK made by MULLARD

Low signal transistors n.p.n., p.n.p. types

14 watt output transistors. 3 BP050 30

BP051 6 complimentary pairs in T066 case (Ideal replacement for AD161 and 162s)

BP052A 1 Tape deck pre-amp IC with record/replay switching No LM1818 with diagram

5 watt audio ICs. No TBA800 (ATEZ) Motor speed control ICs, as used with most BP053 BP054

cassette and record player motors
Digital DVM meter I.C. made by PLESSEY
as used by THANDAR with diagram
7 segment 0.3 LED display (R.E.D.) BP055 BP056 BP057

Bridge rectifiers, 1 amp, 24V Assorted carbon resistors BP058 200 Power supply PCB with 30V 4V/A transformer MC7818CT IC & bridge rectifier: Size 4"×2¾" **BP059**

BP060 Transcription record player motor 1500rpm 240V a.c.

BP061 6.35mm Mono jack plugs 6.35mm stereo switched jack sockets BP064 12 Coax chassis mount sockets

3mtr Euro-mains lead with a matching chassis socket

MULTIBAND RADIO

VHF 54-176 MHz + AM CB BANDS 1-80 Listen to: AIR TRAFFIC CONTROL, AIRCRAFT, RADAR PUBLIC UTILITIES RADIO AMATEURS AND MANY MANY MORE

£15.95 **POSTAGE £2.85**

SQUELCH CONTROL 'RUBBER DUCK AFRIAL

RADIO and TV COMPONENTS ACTON LTD

21 HIGH STREET, ACTON LONDON W3 6NG MAIL ORDER TERMS. POSTAL ORDERS and or CHEQUES with orders. Orders under £20 add £3.00 service charge. Nett monthly accounts to Schools. Colleges and P.L.C. only. ACCESS + VISA. Phone orders between 9.30 & 12pm please Phone: 01-723 8432 or 01-992 8430 Callers 323 Edgware Road, London W2

30+30 WATT AMPLIFIER KIT



An easy to build amplifier with a good specifica-tion. All the components are mounted on the single P.C.B. which is already punched and backprinted.

■ 30W×2 (DIN 4 ohm)

CD/Aux, tape I, tape II, tuner and phono inputs

Separate treble and bass

Headphone jack
Size (H.W.D.) 75×400×195mm

Size (H.W.D.) 75×400×195mm Kit enclosed: case, P.C.B., all components, scale and knobs **£36.80**. post £3.50 (Featured project in *Everyday Electronics* April 1989 issue). Reprint Free with kit.

TV SOUND TUNER



In the cut-throat world of consumer electronics. one of the questions designers apparently pon-der over is "Will anyone notice if we save money by chopping this out?" In the domestic TV set, one of the first casualties seems to be the sound quality. Small speakers and no tone controls are quite common and that really is quite sad, as the TV companies do their best to transmit the highest quality sound. Given this background a compact independent TV tuner that connects direct to your Hi-FI is a must for quality reproduction. The unit is mains operated. This TV SOUND TUNER offers full UHF coverage with 5 preselected tuning controls. It can also be used in conjunction with your video recorder.

£29.50 +£2.50 p&p

As above but with built-in stereo headphone amplifier for the hard of hearing

You can tune into the TV channel you want while still receiving the picture on your TV set. In fact it is rather like a second television, but without the screen. So that the ordinary TV can be placed for everyone to see, and the volume on it can be comfortable for others, while the sound tuner can be placed where you can control it. You will need to plug in one of your own listening aids such as headphones or an induction loop to hear the sound. The tuner is mains operated, has 5 pre-selected tuning controls and can be used in conjunction with a video recorder.

Size: 270×192×65mm. £35.90 +£2.50 p&p

A.M. F.M. STEREO TUNER KIT

*SPECIAL OFFER!

£8.95 Plus £2.50 p&p This easy to build 3 band stereo AM/FM tuner kit is designed in conjunction with Practical Elec-

For ease of construction and alignment it incorporates three Mullard modules and an I.C. I.F.

System.
FEATURES: VHF, MW, LW Bands, interstation muting and AFC on VHF. Tuning meter. Two back printed PCB's. Ready made chassis and scale. Aerial: AM-Ferrite rod, FM-75 or 300 ohms. Stabilised power supply with 'C' core mains transformer. All components supplied are to strict P.E. specification. Front scale size: 10½"×2½" approx. Complete with diagram and instructions.

stereo cassette deck transport mechanism, complete with 3 digit rev counter and tape heads, 12V d.c. operation. Unused manufacturers surplus JAPAN made

£6.20 +£1.50 P&P 2 for £10 +£2.50 P&P

EXTRACTABLE HOUSING FOR YOUR CAR STEREO + SIZE DIN F * HANDLE INCLUDED * SPACE FOR MEMORY BATTERY * 4 OR 2 SPEAKER SYSTEM.

ENABLES YOU TO REMOVE YOUR VALUED STEREO FROM YOUR CAR (WITHOUT THE AID OF A HAMMER AND CHISEL, CHAINSAW £9.95 postage £2.50

W. TREE TRADE T.V.

LEEDS 0532-638804

BROWNED OFF!
FED-UP!
DON'T BE

VISIT

SUNSHINE MILLS AND PUT THAT SMILE SINGLE BACK

BUY MOREPAY LESS

LOW LOW
PRICES
ON ALL OUR
TELEVISIONS

THORN TEXT ONLY £39

PLUS VAT STRAIGHT OFF THE VAN IN 10'S 'B'
GRADE
TELEVISIONS
VIDEOS
HI-FI – AUDIO

RING NOW
FOR QUANTITY DEAL
AND LATEST LOW
PRICES
ON VIDEOS
ETC.

UNIT ONE SUNSHINE MILLS WORTLEY ROAD, LEEDS 12





TOP



TEST FACILITIES SPECIAL DEALS

BASIC COLOUR INS HIMMS IN STR

BRAND NAMES JVC. HITACHI.

OFF THE PILE STOCK AVAILABLE



247-249 HIGH ROAD. **SEVEN SISTERS** TOTTENHAM. LONDON N15 5BT

CONTACT **PAUL ANDREAS**

PANASONIC, PHILIPS, FERGUSON, GRUNDIG etc.

OPEN 9.00 AM - 7.00 PM

MONDAY-SATURDAY

T.V. Video Engineer required. Excellent rates of pay

ELECTRONICS

TILE CROSS TRADING EST. TILE CROSS ROAD, MARSTON GREEN, BIRMINGHAM B33 ONW.

THORN EX-RENTAL SETS FULLY RECONDITIONED & GUARANTEED GOOD RANGE HELD AT KEEN PRICES — PHONE FOR DETAILS

!!! TRADE SERVICE AVAILABLE !!! on all makes



EXPORT ENQUIRIES WELCOME

RING: NORMAN, GLORIA OR PAUL

021 779 5734 021 779 5465 021 779 5466

FAX: 021 779 4701

TRADE ONLY

VIDEO DISPLAY CORPORATION have recently incorporated 'C.R.T. SERVICES' in to the Group, and now offer a wide range of products for the 'T.V. TRADE DISPOSAL MARKET' in addition to their existing range of Computer Tubes and Components.

We supply . . .

TX9/TX10 Text VHS £10.50

TX9/TX10 Non Text VHS£10.50

TX9/10/90/100 8 Ch £10.50

3V35/43/45 Handset£10.95

HANDSETS - VIDEO HEADS - BELTS - IDLERS - FLAPS & TRIMS - VINYLS - PAINTS etc etc

AT LINEEATARI E DRICES

| | AI ONDEAIA | ADEL I IIIOEO | |
|-----------------------------|------------------------------|-------------------------------|-----------------------------|
| HANDSETS | 3V23 Handset £11.07 | IΠ | PHILIPS/PYE |
| HANDSETS | 3V45/8947 Original£15.00 | Trimline Srs. Non Text£11.00 | G11 Text Handset £11.00 |
| THORN/FERGUSON | 8000/9000 2 function £10.50 | Trimline Srs. Text£11.00 | KT3 Non Text £11.00 |
| Professional Series £10.50 | 8500/600/700 Non Text £10.50 | | |
| TX9/TX10 Non Text | Refurbished Handset£6.00 | NEC/HITACHI | RC5140/5141/5154£11.00 |
| TX9/TX10 Stereo-Text £10.50 | | A512230/A514620 type £12.00 | RC5150 £10.80 |
| TX9/TX10 Std. Text | | 4 Button 2 Function | RC5203/4/5/5250/60£11.55 |
| | | Text Granada Universal £11.00 | RC5240/1/5268/74 etc £11.80 |
| TYO/TY10 Text V/HS \$10.50 | GRUNDIG | TEXCUIANAUA UNIVERSAL | DOE400/0000/0001 ata |

3V31/3V32 Handset.....£10.70 AND MANY MANY MORE TYPES . . . ASK FOR LISTS

SONY

KV1612UB/1614E/2204E/KV2704UB/

TP 300 Handset£11.00

TP 400TT Equivalent£11.00

TP 590/600 VT Equivalent £11.00

TP 630/650 TC 650 VT£11.00

| VIDEO HEADS AKAI VS1/2/3/5/10 etc | 3V54/55/57-3HSS-VA £12.75 3V32 - 8942-3HSS4VB £37.95 3V43/53/57-3HSS6VA £48.55 3V48-3HSS4VC £40.50 | VR3605/95-3HSSVL | SANYO VHR1100 etc 3HSSSYB £22.00 VHR1300 etc 3HSSSY £27.00 VTC5000 etc PS3BSF £24.30 VTC9300 etc PS4BSF £31.30 |
|---|--|---|--|
| AMSTRAD 4500/5200/9000/PSF1 £18.90 TVR2/4600/4700 PSF2 £21.45 VCR7000 3HSS-R £21.45 | HITACHI VT11/14/33/-3HSSHB£17.85 VT61/63/-3HSSHB£17.85 | JVC HR2200/3660-3HSSVL 7600/10/50/700 etc | SHARP £20.25 VC105 etc 3HSSSP £20.25 VC205 etc 3HSSSPB £20.25 |
| FERGUSON 3V00/1/6/22-3HSS-V £12.75 3V29/30 etc 3HSS-V £12.75 3V16/23/24/-3HSS-VL £12.75 3V31/35/6/8-3HSS-VL £12.75 3V39/49/etc-3HSS-VL £12.75 3V42/44/45-3HSS-VA £12.75 | VT3000-3HSS-V £12.75 VT5000/5500-3HSS-H £21.45 VT6500/7000-3HSSHHA £17.85 VT8000/8300-3HSSHA £17.85 VT8500/8700-3HSSHA £17.85 VT9300/9500-3HSSHA £17.85 | PANASONIC NV2000 types 3HSS-N | SONY \$L5000 etc PS38S1 |
| 3V46/47/52-3HSS-VA £12.75 | VT9700-3HSSHA £17.85 | NV366 etc 3HSS4NA £31.00 | SLF60 etc PS5B3S£33.75 |

PLEASE ENQUIRE ABOUT TRADE AND QUANTITY DISCOUNTS

FER VT5000 HEAD

| BELT KITS | HIT. 5000 7 Belts £1.20 | SANYO 5300 5 Belts | SONY SLC6 6 Belts £1.18 |
|-------------------------|---------------------------|--------------------------|-------------------------|
| | HIT. 9300 3 Belts £0.46 | SANYO 5500 3 Belts£1.40 | SONY SLC7 6 Belts £1.18 |
| AMST. 7000 3 Belts | N.PAN 300 6 Betts£1.10 | SANYO 9300 5 Belts£1.68 | SONY SLC9 6 Belts |
| FERG. 3V23 3 Belts | N.PAN 777 4 Belts | SHARP 7300 7 Belts £1.32 | SONY SL8000 6 Belts |
| FERG. 3V29 4 Belts | N.PAN 7000 6 Belts | | TOSH. V55-57 4 Belts |
| FERG. 3V31 4 Belts | N. PAN 8600 7 Belts £1.45 | SHARP 9300 5 Belts | TOSH. 9600 4 Belts |
| HIT. VT11 6 Belts £0.98 | SANYO 5000 2 Belts | SONY SLC5 6 Belts£1.18 | 10011. 3000 4 Bella |

We Deliver U.K. & Worldwide . . . FAST < < <

QUANTITY DISCOUNTS ... PLEASE ASK FOR OUR FULL LISTS

VIDEO DISPLAY CORPORATION

Griftronic Emission Limited Unit 2, Avenue Farm Ind. Est. Birmingham Road, Stratford-upon-Avon Warks. CV37 0HU.

Minimum Order (0789) 295883 Phone Telex 31470 GRIFEM G (0789) 415243

£5.00

RC5429/5300/5301 etc £11.00

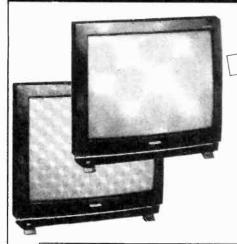
RC5325/5320£11.00

RC5373/5378£11.60

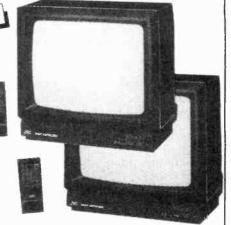
2760E/5020£11.85 RC5525 Philips Original£10.50

please add 75p per order for Postage Charges plus VAT

JOHN TODD TELEVISION & VIDEO WHOLESALERS 4,000 sq ft OF TV & VIDEO







QUALITY DEALS ALWAYS ARRANGED

| All 9000 Series Televisions, Working/Non-Working, Untouched, as since disconnected, from rental user Thorn/No Thorn Portable Televisions, all makes, | |
|--|-----|
| working, from | £40 |
| Thorn TX9 Off the Pile | £26 |
| Thorn TX9 Working and Tested | |
| Thorn TX10 Non Text Off the Pile | £30 |
| Thorn TX10 Non Text Working and Tested | |
| Thorn TX9 & 10 Text Off the Pile | £45 |
| Thorn TX9 & 10 Text Working and Tested | |
| ITT Digivision Off the Pile Working/Non Working | 280 |
| USUAL BARGAIN CORNER COLOUR SETS FROM £5. | |
| PHILIPS G8 DECCA BRADEORDS ETC | |

CAMERA EQUIPMENT, BATTERIES AND ACC., CAMCORDERS, PORTABLE UNITS, FULL SIZE, C FORMAT VHS, TUNER TIMERS, CHARGERS ETC. ETC.

ALL STOCKED IN QUANTITY

— PHONE FOR DETAILS.

| Thorn 3V29/30 Working | £65 |
|--|-------------------|
| Thorn 3V29/30 Non-Working | £55 |
| Thorn 3V35 Working | £95 |
| Thorn 3V35 Non-Working | £75 |
| Thorn 3V31/32 Working | £100 |
| Thorn 3V31/32 Non-Working | £65 |
| Various Front Loading VHS Videos from Philips, Hinari etc, etc | Sharp, £75 |

OTHER LINES IN STOCK IN QUANTITY INCLUDE DATATEXT 90 PORTABLES, TEXT PORTABLES, GRAPHIC PRINTERS, THERMAL PRINTERS, VIDEO PRINTERS, KEYBOARDS, VIEWDATA TERMINALS.

TX9 CATHODE RAY TUBES, TESTED AND PERFECT AT £15.00. AND MANY, MANY MORE.

STOP PRESS!

BLACK ASH FINISH. WILL SUIT ALL STEREO TELEVISIONS INCLUDING FERGUSON 22BS, 51AS, 59BS, 66BS PLUS MANY MORE — IN FACT ANY TV. WITH AN EXTENSION SPEAKER SOCKET. THESE UNITS CAN BE USED IN CLOSE PROXIMITY WITH THE TV WITHOUT CAUSING PROBLEMS.

BRAND NEW & BOXED £15

Per Pair Plus VAT

PRICES. ALL PRICES EXCLUDE VAT. NEW HANDSETS CHARGED EXTRA.
ORIGINAL HANDSETS FREE.
TRADE ONLY

JOHN TODD TELEVISION & VIDEO WHOLESALERS

Units 15/16, Stone Business Park, Stone, Staffs



PHONE 0785 817695 and talk to Harry or Paul Roman



HIGH GRADE COMPONENT PARCELS

PARCEL 10B:

MONSTER OPTO

PARCELS

devices PARCEL 12A

PARCEL 12B:

300 OPTO DEVICES

for £25 + VAT

300 ASSORTED CONNECTORS

for £25! + VAT

If it has anything to do with light, it's in

receivers, bar graph assemblies, opto

The larger parcels have LCDs too. An

100 OPTO DEVICES for £10 + VAT

switches, and who knows what else.

here. There are LEDs of all shapes,

sizes and colours, seven segment

displays, infra-red senders and

excellent selection of top quality

EVERYTHING MUST

SEMI CONDUCTORS

Unless otherwise stated, all the clearance parcels we offer contain brand new, top grade components. If some of the offers look too good to be true, all I can say is that the optimists will get some stunning bargains, the cynics will never know what they've missed, so everybody will be happy! All offers apply only while current stocks last – watch out for next month's parcels or, better still, be the first to hear about any new offers by putting your name on our mailing list.

Access Orders: Tel: 0600 3715

What a selection! Every single parcel will contain: ICs, signal diodes, rectifiers, zeners, semiconductor VDRs, transistors, FETs, high voltage transistors, power transistors, triacs, voltage regulators, and a good deal more. Did I mention the varicap tuning diodes? The VHF transistors? The Schottky rectifiers? All the semiconductors you've ever wanted, but could never afford. This has to be one of the finest parcels we have ever offered. Don't miss it!

PARCEL 9A: 200 SEMICONDUCTORS for £10! + VAT

PARCEL 9B: 1000 SEMICONDUCTORS for £40! + VAT

CONNECTORS

If you ever again need to connect anything to anything else, the chances are you'll find the plugs and sockets for it in this parcel. Computers? There are D connectors, printer connectors, RS232 connectors, and so on. PCBs? There are edge connectors and pin connectors. RF connectors? No problem. Audio? There are speaker plugs and sockets, DIN connectors and much more And all for 10p or less apiece! How can you resist it?

100 ASSORTED CONNECTORS for £10! + VAT

RESISTORS

JUNK!

Bits of

Supplied to you as they arrive with us: some bagged, some handoliered some reeled, some loose. The mixture has 1/4W resistors in every single E12 value, with some E24 and an assortment of E96 precision types. Then there are 1/2W resistors and a nice selection of

power types to 5W and above. The proportions vary from parcel to parcel, but you'll certainly have an excellent range of types and values I have absolutely no intention of counting out tens of thousands of

resistors, so these are sold by weight, As a rough guide 1000 1/4W resistors weigh about 240g, so there are over 4000

of these to the Kg PARCEL 13A: 10Kg RESISTOR

PARCEL £30

equipment, PCBs. components, hardware, mags, books, data, everything electronic turns up at some time or other in our legendary JUNK parcels There's so much unsorted stuff around the place we hardly know what goes in there ourselves! The components won't be neatly packed - once we've combed their hair and dressed them in their Sunday best, they go onto one of

The first 10Kg is yours for £18 + VAT After that, the price is £1 per Kg, so 11Kg will be £19 + VAT, 12Kg will be £20 + VAT, and so on. Have as much as you like!

lists. In the JUNK parcel you see them in

JUNK SPECIAL: 1 cwt for £50!

+ VAT

the raw state

UK Orders: Please add £2.50

towards postage and packing and 15% VAT to the total

Europe and Eire: Please add £6.00 carriage and insurance. No VAT Outside Europe: Please add £12.00 carriage and insurance. No VAT

PRESETS

An attractive and very functional pack of preset pots. The parcels contain a high proportion of top quality cermets, both single and multi-turn. In fact they outnumber the carbon types! All styles and types are represented: open, enclosed, vertical, horizontal, square, round, 3/4" and 11/4" multi-turns, and so on. All values from a few ohms to several meas

PARCEL 11A: 200 PRESETS for £6 + VAT PARCEL 11B: 1000 PRESETS for £25 + VAT



Take a rocker switch in one hand, roller microswitch in the other, and have yourself a rock 'n' roll party! OK, the the jokes aren't up to much, but the switches are superb. Lots of rocker switches - ideal as spares for household gadgets. Some, so I'm told, fit the dashboard cut-outs on Ford cars, so just think of the extra lights and stuff you could fit! Then there are the toggles, the push switches, the rotaries and the sliders. All tucked up snugly, bless their cotton socks, in our switch parcels. And all for 10p each or less it's enough to make you explode with joy. Well, nearly enough.

PARCEL 14A: 100 ASSORTED SWITCHES for £10! + VAT **PARCEL 14B: 300 ASSORTED**

SWITCHES for £25! +

POLYESTERS

Above 100n or so the price of nonelectrolytic caps starts to rise steeply To get one above 1µF will cost the earth, or at least a major planet. And not even an asteroid for change. These parcels contain caps to at least 4µ7. Replace those nasty non-polar electrolytics in your speaker crossovers, connect them across electrolytic smoothing and coupling caps in your hi-fi, stop using back-toback tants in your projects. The larger caps will easily cost several EEEs each from normal suppliers. We've got too many, so

PARCEL 15A: 200 HV POLYESTERS for £10 + VAT PARCEL 15B:

600 HV POLYESTERS for £25 + VAT

HIGHGRADE COMPONENTS LTD

Unit 112,8 Woburn Road, Eastville, Bristol BS5 6TT Tel: 0600 3715 Fax: 0600 72262

TELEVISION NOVEMBER 1989

59



JUST OFF A24 NEAR HORSHAM

ALL TRADE GOODS GUARANTEED AND EXCHANGED IF REQUIRED.

ALL GOODS READY FOR SHOWROOM.

★ WORKING P.I.L. TYPE TVs FROM £15 ★ ELECTRONIC TYPE VIDEO RECORDERS FROM £70 * TELETEXT TVs INC. HANDSETS FROM £65.

LOW PRICES FOR MARKED STOCK

NON-GRANADA STOCK

THORN, SHARP, HITACHI

EXAMPLES

| | 1 | |
|------|---|-----|
| 9300 | | 08£ |
| 381H | *************************************** | £85 |
| VT11 | | £75 |

NORMAL GRANADA STOCK ALSO AVAILABLE Mk 3's, 3A's, 4's etc

ADVANCE ORDERS TAKEN ON ALL STOCK



T20's/22's £20.00

CRT's GUARANTEED OK LOADS IN STOCK

MANY MANY MORE MAKES & TYPES IN STOCK FREE SPARES PACKAGE WITH 20+ UNITS

> Reconditioned Micro Wave Ovens from £30 + VAT

Telephone Dave or Alan between 9 & 5.30 Weekdays. 9 till 1 Saturdays

0403 732966

OR MOBILE 0860 227995 24 HOUR ANSWERPHONE

Rear of UNIT 31, STATION ROAD INDUSTRIAL ESTATE, SOUTHWATER, **NEAR HORSHAM, WEST SUSSEX**

NOTICE

TO ESSEX TV TRADERS

NEW WAREHOUSE Ex-rental TVs and VCRs plus new manufacturers 'B' graded goods available now!

★ Fully serviced, ready for the showroom

VCR toploaders/front loaders ★ TVs — Ferguson, Philips

Professionals, TX stereo, National Panasonic, Grundig, Decca, Toshiba. JVC, Samsung and a lot more

SAMSUNG Electronics

FERGUSON



GRAB SOME **ACTION NOW** Strictly TRADE ONLY

EARVISION

30A CORRINGHAM RD STANFORD-LE-HOPE, ESSEX OPEN MON-SAT 9AM-6PM

APPROX. 5 MINS FROM DARTFORD TUNNEL TAKE A13 TILBURY ROAD FROM JUNCTION 30/31, M25

TV LINE OUTPUT TRANSFORMERS PRICES INCLUDE VAT & CARRIAGE

VIDEO HEADS, TRANSISTORS, IC's, ALSO STOCKED.

| BAIRD: 8290, 8752, 8773, 8180 | 12.00 | | 9.20 1.50 |
|--|--|--|--|
| RANK BUSH MURPHY A774 with stick rectifier A816, T16, T18, Z712, Z715 | 9.78 10.35 | CVC5, CVC7, CVC8, CVC9, CVC20 1 CVC25, CVC30, CVC32, CVC45 CVC800, 1100, 1150, CVC40 P. | 0.35 9.20 0.A. 0.A. |
| T20, T22, T26, Z179, A823 DECCA: 1210, 1211, 1511 | 11.50 | CT200, CT200/1, CT213 1 | 9.20 0.35 9.78 |
| 1700, 2001, 2020, 2401, 2404 CS1730, 1733, 1830, 1835 30, 70, 80, 90, 100 120, 130, 140, 160 | 9.20 9.20 9.20 P.O.A. | 320 series TX, T8, TX2, TX3 mono P. G8 and G9 Series | 9.20 9.78 .O.A 9.20 9.20 |
| FERGUSON, THORN: 1590, 1591 1690, 1691. built in rect. | 9.20 9.78 | CTX G11. K30. K4. K40. split diode P.I | 0.A. 0.A. |
| 1600, 1615, 1700, 1790 3000, 3500, 8000, 8500, 8800 9000, 9200, 9300 series 9500, 9600, 9650 series TX9, TX10,TX90, TX100, TXP5 MOVIESTAR 3781, 3787, 8180 TX10 focus unit | P.O.A. P.O.A. 12.00 12.00 P.O.A. 12.00 10.87 | DORIC Mk3, Mk1 SONY KV 1400, 1612, 2000 GRUNDIG, G.E.C. NORDMENDE: 8290, 8180, Z306 SANYO: 5101, 5103, 7118, 7130 SHARP: C1851H, C2051H, 1405 HINARI: CT4, CT5 | 0.A. 1.50 0.A. 0.A. 0.A. 0.A. 0.A. 0.A. |
| FIDELITY: FTV12 mono ZX2000 ZX3000 14", 16", 20" ZX3000 22" | 10.35 16.43 27.28 | TELEFUNKEN: most models in stock HITACHI: 1471, CPB260, 2501 P.O. | |

Price

48.30

28.75

CASED AUTO TRANSFORMERS

Size

1000 watt

500 watt

300 watt

240V to 115V USA 2 PIN SOCKET

TOROIOAL TRANSFORMERS WOUND

Delivery by return of post.

Tidman Mail Order Ltd., 236 Sandycombe Road, Richmond, Surrey TW9 2EQ. Approx. 1 mile from Kew Bridge.

Phone: 01-948 3702 Mon-Fri 9 am to 12.30 pm & 1.30-4.30 pm Sat 10 am to 12 noon

| All Idlers | are Ma | nufacturer | s Origin | al. V | IDE | O "RE | FUI | RB" K | ITS |
|---|-------------------|----------------------------------|-----------------------|---------------------------------------|----------------------|-------------------------------------|----------------|----------------------------|----------------------------|
| FERGUSON | 3V29/30 | FERGUSON | 3V35/39 | FISHER | FVH-P615 | HITACHI VT80 | 000 Series | HITACHI | VT9000 |
| Take Up Idler Reel Idler | 1.85 2.75 | Take Up Idler Reel Idler | 1.85 3.25 | | | F/F Rewind Idl. Wind Roller | 3.95 0.80 | Play Idler | Series 4.35 |
| Take Up Clutch Belt Kit | 2.75 | Take Up Clutch Belt Kit | 2.80 | Idler | 4.95 | Reel Table | 2.45 | Play Pulley | 0.90 |
| Pinch Roller | 1.95 3.95 | Pinch Roller | 1.75 3.95 | Belt Kit Pinch Roller | 1.95 3.9 5 | Belt Kit Pinch Roller | 1.50 3.95 | Belt Kit Pinch Roller | 1.50 3.95 |
| | £13.25 | | £1 3.5 0 | | £10.85 | | £12.65 | | £1 0.70 |
| KIT 1 | £10.75 | KIT 2 | £10.85 | KIT 3 | £8.95 | KIT 4 | £10.85 | KIT 5 | £9.45 |
| HITACHI | VT11/17/ 19/33 | PANASONIC | NV300/333 | PANASONIC | NV370/830/ 850 | PANASONIC | NV2000 2010 | PANASONIC | NV7000 Series |
| F/F Rewind Idl. | 2.75 | VXP 0433 Idler VXP 0401 Idler | 4.95 1.05 | VXP 0521 Idler | 3.95 | VXP 0329 Idler VXP 0331 Idler | 0.95 | VXP 0343 Idler | 5.95 |
| Belt Kit | 2.95 | Belt Kit | 2.95 | Belt Kit | 1.95 | Belt Kit | 0.95 2.25 | VXP 0344 Idler Belt Kit | 1.05 1.95 |
| Pinch Roller | 3.95 | Pinch Roller | 3.95 | Pinch Roller | 3.95 | Pinch Roller | 3.95 | Pinch Roller | 3.95 |
| 1/1 T 0.4 | 29.65 | | £12 .90 | | £9.85 | | 01.82 | | £12.90 |
| KIT 6A | £7.95 | KIT 7 | £10.75 | KIT 8 | £7.95 | KIT 9 | £6.95 | KIT 10 | £10.15 |
| As abov | e but | SANYO | VTC5000 | SHARP | VC9300/ 9500 | SHARP | VC381- 390 | ORDER | |
| includ | ling | Reel Drive | 5.95 | ldler 0005 | 3.50 | ldler 0005 | 3.50 | Please add Post & Pa | |
| Cluto | | Reel Motor Belt Kit | 6.95 0.95 | Belt Kit Pinch Roller | 2.50 3.95 | Belt Kit Pinch Roller | 2.50 3.95 | Then add 15 C.W.O O | |
| Mechar | nism | | £13.85 | | 29.95 | | 29.95 | Sorn | <i>!</i> ! |
| KIT 6B | £17.50 | KIT 11 | £11.95 | KIT 12 | £8.50 | KIT 17 | £8.50 | Trade (| Only |
| VOLTA REGULAT | | VIDE | O F | lEAD: | S | VII |)FC | HEA | פתו |
| | Each | AKAI | | HINARI | | PHILIPS | | SOLAVOX | |
| STK 772B | 5.95 | | Each | | Each | | Each | | Each |
| STK 5332 STK 5361 | 3.95 6.95 | VP 7100/7200/97 VP 77-88 | 00 13.50 13.50 | VXL2/3 VXL4 | 23.00 23.00 | VR6420/6460 VR6462/3/4 | 21.50 37.50 | 1000 | 22.25 |
| STK 5421 | 3.95 | VSI-2.5 | 13.50 | VXL5 VXL6 | 22.00 23.75 | VR6560 | 37.50 | SONY | |
| STK 5481 STK 5482 | 5.95 5.95 | ALBA | | VXL35 V20H | 23.00 22.00 | SAISHO | | C5/6/7 | 18.95 |
| STK 7348 | 4.95 | 4000 | 22.25 | V2011 | 22.00 | VR705-805-905 | 23.00 | SLC 20/24/30/33/ | 44 21.50 |
| STR 441 STR 451 | 5.95 5.95 | - | | MATSUI | | VR1000-1600 | 23.00 | TOSHIBA | |
| STR 454 | 5.95 | AMSTRAD | | VX500-773 inc | 22.00 | SAMSUNG | | V31/33 9600 | 22.50 |
| STR 4211 STR 5412 | 4.50 5.95 | 4500/5200 4600/4700 | 21.00 23.50 | 77.000 770 III.0 | 22.00 | VB900-910 VX510/20 | 24.00 24.00 | V55-57 V71-87 | 14.50 23.00 |
| STR 6020 (kit) | 5.95 | 7000 9000 | 23.50 21.00 | MITSUBISHI | | VX616/626/627 VX717 | 24.00 | V93 | 23.00 |
| STR 501 0 3 * STR 58041 | 5.95 6.95 | | 21.00 | HS303/304 | 28.00 | | 24.00 | TRIUMPH | |
| | THE PERSON | FERGUSON | | HS320 HS700 | 28.00 28.00 | SHARP | 04.55 | VR9500 | 23.00 |
| GENUINE SH GEZZ100 | | 3V00-3V22 3V29 (P.C.B. or " | 13.50 L") 13.50 | HS300/1/2 | 32.50 | VC200/VC300/3300 381/4/5/7/VC388 | 21.50 | VR9501 VR9592 | 23.00 23.00 |
| REE | - 3 | 3V23/35-39 | 13.50 | | | 477/481 VC220 | 21.50 21.50 | VI13032 | 23.00 |
| m _ | | 3V32 3V48 | 38.00 38.00 | ORION | | VC581/3/5 VC9300/9500/9700 | 21.50 21.50 | | |
| MOT | | 3V44/45/54/55 | 24.50 | VH 2500-2948 inc. VR 2949-821 inc. | 23.00 23.00 | VC2300/8300 VC7300/8300 | 39.50 39.50 | | ANASONIC /300/333 |
| Suitable | e for 🏻 📑 | FIDELITY | | | | | 39.50 | (P.C.B. Type) N | /2000 Series 4/3000 Series |
| AMSTRAD | | 1000 | 22.00 | PANASONIC | | VTC9100/9300 | 25.00 | 3V23 3V29-39 NV | /7000 Series |
| VR7000 | | FISHER | | NV2000/3000/7000 | | VTC5000/6500 | 35.00 29.50 | ("L" Type) N | /8000 Series |
| SAISHO | 3 | FVHP 420-910 (ir | nc.) 22.0 0 | 8000 NV300/332/33 | 13.50 13.50 | VTCM10/11/20/21 HR 1100/1300 | 29.50 39.95 | 2 u | |
| VR705-805- | 005 | ` <u> </u> | | NV230/260/270/28/ NV470/480/NV100 | 27.50 27.50 | SENTRA | | £12.5 | |
| | 900 | GEC/HITACHI | | NV370 NV380 NV330 | 16.00 27.00 | 8000 | 24.25 | | |
| SHARP | - 5 | 5000 VT6500/8000/930 | 23.50 0 22.50 | NV366 | 33.00 | | I | | - |
| *************************************** | - 5 | VT11/33 VT17/19 | 19.50 39.00 | NV430/460 NV730 | 23.00 33.00 | IRWIN | ELF | CTRON | HCS |
| VC381/3/6 | | V 1 1 / 1 U | | NV777 | 27.00 | | | | |
| VC381/3/6 VC2300/330 | _ | VT35/38/39 | 39.00 | NV788 | 46.00 | UNIT 20 | U, J.C. AI | LBYN COMPLE | : A. |
| VC381/3/6 VC2300/330 9300/9500/9 | 700 | | 39.00 | NVG10/12/14 | 27.50 | | | IEFFIELD S3 8 | |
| VC381/3/6 | 700 | GOLDSTAR 4000 Series | 39.00 22.25 | | | BURTON | RD., SH | | BX. |

AVS

THE A.V.S. GROUP AUDIO VISUAL SERVICES

HERE'S JUST A SELECTION OF OUR PRICES!

TRY US ONCE AND YOU WILL BE HOOKED — THAT'S A PROMISE!

| Contract of the Contract of th | UN-SERVICED | SERVICED | UN-SERVICED | SERVICED |
|--|-----------------------|-----------------------|-------------------|-------------------|
| The second secon | TX9/10 | TX9/10 | 3V30 | 3V30 |
| | £20 | £29 | £45 | £65 |
| | TX9/10 TEXT £39 | TX9/10 TEXT £49 | F/LOAD £50 | F/LOAD £65 |
| The second secon | TX9/10 | TX9/10 | STEREO | STEREO |
| | STEREO | STEREO | VCR's | VCR's |
| | £59 | £69 | £60 | £80 |
| TO THE PERSON OF | NON | NON | NON | NON |
| | THORN | THORN | THORN | THORN |
| | TV's | TV's | VIDEOS | VIDEOS |
| | FROM | FROM | FROM | FROM |
| | £10 | £15 | £40 | £50 |

EXPORT
FOR THE BEST
DEAL IN ENGLAND
CONTACT THE EXPERTS
FORGET THE REST
TRY THE BEST
CONTACT DAVE
HOLMES AT
HEAD OFFICE

ALL PRICES ARE SUBJECT TO 15% VAT. PRICES ARE ALSO BASED ON QUANTITY AND AVAILABILITY — HANDSETS CHARGED EXTRA.

HEAD OFFICE 08444 3226 08444 2995
36 WYCOMBE ROAD, PRINCES RISBOROUGH, BUCKS.

HUMBERSIDE OFFICE © 0652 660242 0652 660243
UNIT 8, ST. MARY'S WORKS, MARSH LANE, BARTON-ON-HUMBER, SOUTH HUMBERSIDE



VHS VIDEOS

ELECTRONIC TOP LOADERS £40 FRONT LOADERS £50

MANY MAKES & MODELS — GUARANTEED "OFF THE PILE"

CTVs from £5, WORKING from £10 REDIFFUSION MK 4 TEXT 260

working with handset

UHF/VHF CTVS FOR EXPORT! MIXED LOADS DIRECT FROM SOURCE NEW HITACHI TUBES — 20" 510VLB22 replacement £30

All Prices Subject to VAT

TESTED WORKING PANEL

| MODEL | I.F. | DECODER | FRAME | LINE | POWER | CONV. | TEXT | CH CH BUTTON |
|---------------|------|---------|-------|------|-------|-------|------|-----------------|
| G8 | | 26 | 26 | £15 | 210 | 25 | | 25 |
| G11 | 26 | £6 | £12 | £10 | £15 | 25 | 210 | £12 |
| KT3/K30 | 92 | 26 | | £25 | | | £15 | 26 |
| DECCA 80 | £12 | 26 | 26 | £12 | 210 | | | 28 |
| THORN 9000 | 1 | 210 | 82 | £ | 18 | | | 26 |
| THORN 9600 | 1 | 210 | ឡ | 8 | £12 | | | |
| DORIC MK4 | 210 | 83 | 82 | £12 | €18 | | £12 | 26 |

PANELS ADD £2 P&P. THEN ADD 15% VAT

LONDON TELEVISION 108 Kingston Road, London SW19 01-543

ATTENTION Importers - Wholesalers - Distributors

EXCLUSIVE AGENTS REQUIRED

FROM

| PANASONIC | PA | NA | S | o | N | I | C |
|-----------|----|----|---|---|---|---|---|
|-----------|----|----|---|---|---|---|---|

| TAMAGEMIC |
|--------------------------|
| NV2000, NV2010 £7.9 |
| NV7000, NV7200 £7.95 |
| NV333, NV370 £7.95 |
| NV777 £14.9 |
| All others available POA |

SHARP

| VC9300, | VC950 | 0, V | C9700 |
|----------|---------|------|--------|
| VC381, V | C383, V | C386 | £11.95 |

TOSHIBA

| V9600 | | | | | | | | | £12.9 |
|----------|--|--|--|--|--|--|--|--|-------|
| V31, V33 | | | | | | | | | £12.9 |
| V55, V56 | | | | | | | | | £12.9 |
| | | | | | | | | | |

FERGUSON/JVC

| 3V00, 3V16, 3V22 | £7.95 |
|------------------------|-------|
| 3V29, 3V30 | £7.95 |
| 3V32 | £7.95 |
| 3V35, 3V36, 3V38, 3V39 | £7.95 |

SANYO

| VTC5000, | VTC5150, | VTC530 |
|-----------|-----------|--------|
| VIIC5400, | VTC9300 . | £16.9 |
| | | |

| | HITACHI |
|----|---------------------------------|
| 95 | VT5500, VT8000, VT8300, VT8500. |
| 95 | VT8700, VT9300, VT9500, VT9700. |
| 95 | VT11E, VT14E, VT33E£11.95 |

| HR2200, | HR3300. | HR3320, | HR3330, |
|---------|-----------|---------|---------|
| HR3350. | HR3360, | HR3660, | HR3750, |
| HR3860, | HR4100. | HR7200, | HR7600, |
| HR7610, | HRD110. | HRD111. | HRD120. |
| HRD121, | HRD220, H | RD225 | £7.95 |

SONY

| SLUD, | SLUD, | SLU1, | SLOUUU, |
|--------|-----------------|-----------------|---------|
| SL8080 |), SL C2 | 0, SL C3 | £12.50 |
| DUII I | ne | | |

| I III U | |
|---------|---------|
| VR 6460 | £8.95 |
| VR 6462 | . £8.95 |

All other brands and models POA

CONDITIONS: 1. For more information, advise us of your telephone number by phone or fax and we will call you back immediately at our expense. 2. The majority of our video heads are from original equipment manufacturers in Japan. 3. We are supplying in excess of 300 satisfied customers on a weekly pasis. 4. Minimum quantity is 200 heads assorted or 50 of any one model. 5. Shipment is usually within 2/7 days and is by air parcel post or by airfreight. Air postage and airfreight is paid by us. 6. U.K. customs duty of only 5.8% (fariff code 852290.99.9.90) is payable on receipt of the goods. 7. Payment is by T.T., bank draft, or letter of credit. Access and Visa card payments are possible with a 5% admin. charge

CREDO ELECTRONICS

PO Box 2372, Port Elizabeth, 6056, South Africa. Telephone: 41-343905 Fax: 41-338348 South Africa

(EXCLUSIVE DISTRIBUTORS REQUIRED)

| VIDEO | HEADS |
|-------|--------------|
|-------|--------------|

| VIDE | ,, |
|--|------------|
| REPLACEMENTS | |
| All our replacement heads are brand new precision Japanese heads not refurbished. | |
| Panasonic 3H-SS(N) £16.00 Fits model numbers: NV2000, NV2010, NV7000, NV7200 NV333, NV8600, NV8610. £19.90 SHSS-UI(N) £19.90 Fils model numbers: NV370 Phillips VR6460. \$1+SS(4N) £38.50 Fits model number: NV366 \$34.50 SHSS(4NB) £38.50 Fits model number: NV730 | |
| Ferguson 3HSS(V). £16.00 Fits model numbers: 3V00, 3V16, 3V22 3V29, 3V30, 3V31, 3V35, 3V36, 3V38, 3V39 HR2200 HR3300, HR3330, HR3360 HR7200, HR7300, HRD120, HRD130, 3HSS4VB £44.50 Fits model numbers: 3V32. | |
| Sharp £26.5 3HSS(SP) £26.5 Fils model numbers: VC9100, VC9300 VC9300 VC9500, VC9700, VC381, VC8381, VC388 VC388, VC482 |) |
| Toshiba PS3B(T) | |
| ### Hitachi 3HSS(H) | |
| Sony PS38(5) £19.99 Fils model numbers: SLC5, SLC6, SLC7 SL3000 also various NEC models. P848(2S) £26.54 Fils model numbers: SLC20, SLC30, SLC40 SLF1 PS5R(3S) | , \ p \ |
| PS5B(3S) £44.20 Fits model numbers: SLC9, SLT50, SLC8 SLF60. | , |
| Amstrad/Saisho 3HSS(R) £28.56 Fits model numbers: VCR7000 and all mod els using Orion chassis. £28.56 Fits model numbers: VCR4500, VCR5200 VCR9000 etc. | o \ |
| Fisher/Fidelity 3HSS(SF) | |

| GENUINE HEADS | |
|--|--|
| Panasonic NV2000, NV2010 NV7000, NV7200 NV333, NV370 | £44.00 £44.00 £44.00 £64.50 |
| NV366 NV688, NV777, NV788 NV730. All others available P.O.A. Ferguson | £64.50 £67.50 |
| 3V00, 3V16, 3V22. 3V29, 3V30. 3V32. 3V35, 3V36, 3V38, 3V39. | £59.90 £59.90 £66.90 £59.90 |
| Sharp VC7300, VC7700, VC7750 VC8300 VC9300, VC9500, VC9700 VC381, VC383, VC386 VC482 All others available P.O.A. | £69.90 £69.90 £62.00 £62.00 £62.00 |
| Sanyo VTC5000, VTC5150 VTC5300, VTC5400 VTC9300 | £39.90 £39.90 £39.90 |
| Sony SLC5, SLC6, SLC7 SL8000, SL8080 SLC20, SLC30 SLC9 | £49.50 £49.50 £54.50 £54.50 |
| Toshiba V9600. V8600. V8600. V31, V33 V55, V56. | £59.90 £69.90 £59.90 £59.90 |
| Hitachi VT5000, VT5500 VT6500, VT8000, VT8300 VT8500, VT8700 VT9300, VT9500, VT9700 VT11E, VT14E VT17E VT32E VT32E | £49.50 £49.50 £49.50 £49.50 £45.50 £54.60 £49.50 |
| Philips VR6460VR6467VR6462, VR6467 | £44.00 £42.90 |
| - | |

| GENUINE ' | |
|--|---------|
| Panasonic | |
| NV2000, NV2010 | €6.50 |
| NV7000, NV7200 | |
| NV333, NV366 | €6.50 |
| NV370, NV830, NV850 | £2.80 |
| NV688 | . £6.50 |
| NV777, NV788 | . £4.70 |
| NV8600, NV8610 | . £6.50 |
| NV730 | . £1.90 |
| NV230, NV430, NV870 | £3.20 |
| NV870, NV810 | €2.80 |
| Ferguson | |
| 3V00, 3V16, 3V22 | . £6.50 |
| 3V23 | . £3.90 |
| 3V29.3V30 | £4.90 |
| 3V35, 3V36, 3V38, 3V39 | £2.90 |
| Sanvo | |
| VTC5000, VTC5150 | . £1.99 |
| VTC5300, VTC5400 | |
| VTC9300 | . £6.50 |
| Camer | |
| SLC5, SLC7 | . £6.50 |
| SLC6 | . £7.50 |
| SLC6SL8000, SL8080 | . £6.50 |
| Sham | |
| VC7300, VC7700, VC7750 VC8300 VC9100, VC9300, VC9500 | . £6.50 |
| VC8300 | £6.50 |
| VC9100. VC9300. VC9500 | . £6.50 |
| VC381, VC383, VC386 | . £6.50 |
| Hitachi | |
| VT5000. VT5500 | £6.50 |
| VT8000, VT8300, VT8500 | £2.90 |
| VT9300, VT9500, VT9700 | £3.30 |
| VT11E, VT14E, VT17E, VT19 | |
| VT33E | |
| Akai | |
| VS9700 | £6.50 |
| VS2, VS3, VS4, VS5 | £4.90 |
| VS9300, VS9500, VS9700 | €6.50 |
| Many others available | |
| , | |

CREDIT CARD ORDERS BY TELEPHONE RECEIVED BY 4 PM. ARE DESPATCHED SAME DAY



BELT KITS

REPLACEMENTS
Panasonic
NV2000, NV2010

NV7000, NV7200 NV333, NV366 NV8600, NV8610 **Ferguson** 3V00,3V16,3V22.

3V29 3V30

£3.50 £3.00 £3.00 £3.95

£3.50 £2.90 £3.50



3HSS(SF) £29.90 Fits model numbers: FVHP615, FVHP710, V1000. LARGE RANGE OF REMOTE CONTROL'S FOR TV AND VIDEO

THIS MONTH **SPECIALS**

STK 5481 CHIP £5.80 PLUS VAT

HEADS

3HSS(V) FERGUSON & JVC

3V00 - 3V16 - 3V22 3V29 - 3V30 - 3V31 3V35 - 3V36 - 3V38 etc

3HSS (N) PANASONIC

NV2000 - NV2010 - NV3000 NV7000 - NV7200 - NV333

BOTH AT

 $\mathfrak{L}14.50 + VAT$ ADD 70p POST & PACKING

WE CARRY HUNDREDS OF VIDEO SPARES INC. PLAY IDLERS, CLUTCHES, MOTORS, SERVICE MANUALS, TENSION BANDS, BELTS AUDIO/CONTROL HEADS. ALIGNMENT TOOLS AND TAPES ETC. **SPECIAL ORDER FACILITIES** **FOR NON-STOCK ITEMS**

PINCH ROLLERS

| NV2000, NV2010, NV7000, NV7200 . NV333, NV366, NV370, NV430 NV730 | £4.95 £4.95 £7.95 |
|---|---|
| Ferguson/JVC 3V00, 3V16, 3V22, 3V23 3V24 | £4.95 £4.95 £4.95 £4.95 |
| Sanyo VTC9100, VTC9300 VTC5000, VTC5150, VTC5300, VTC5400 | £4.95 |
| Sony SLC5, SLC7 SLC6 SL8000, SL8080 | £5.95 £5.95 £5.95 |
| Sharp VC7300, VC7700, VC7750 VC8300. VC9100, VC9300, VC9500 VC381, VC383, VC386 VC651 etc. | £4.95 £4.95 £4.95 £4.95 £4.95 |
| Hitachi VT5000, VT5500 VT8000, VT8300, VT8500 VT9300, VT9500, VT9700 VT11E, VT14E, VT17E, VT19 VT33E | £5.95 £4.95 £4.95 £4.95 £5.95 |
| 4kai VS9700 VS2, VS3, VS4, VS5 VS9300 VS9500 VS9700 | £6.95 £6.95 £4.95 |

LARGE RANGE OF IC'S & SEMI-CONDUCTORS AVAILABLE FOR TV. AUDID & VIDEO VIDEO



IDLER WHEELS

| Panasonic | |
|--|-------|
| NV2000, NV2010 (Genuine) | £2.90 |
| NV7000, NV7200 (Genuine) | £2.90 |
| NV333, NV366 (Genuine) | £2.90 |
| NV370, NV230, NV430 (Genuine) | £4.50 |
| NV777, NV788 (Genuine) | £4.50 |
| NV730 (Genuine) | €4.50 |
| Ferguson/JVC | |
| 3V00, 3V16, 3V22 (Large clutch) | £5.95 |
| 3V00, 3V16, 3V22 (Small clutch) | £6.95 |
| 3V29, 3V30, HR7200, HR7300 | £3.90 |
| 3V35, 3V36, 3V38, 3V39, HRD120 | £3.90 |
| Sanyo | |
| VTC9100, VTC9300 | £1.90 |
| VTC5000 Reel drive pulley | £6.50 |
| VTCM10 Reel drive pulley | 29.90 |
| Sony | |
| SLC5, SLC7 Rewind kit | £4.95 |
| SLC6 Rewind kit | £4.95 |
| Sharp | |
| VC9100, VC9300, VC9500 (Genuine) | £3.90 |
| √C381, VC383, VC386 (Genuine) | £3.90 |
| VC482, VC483, VC581 (also Saisho) (Genuine) | £3.90 |
| VC482 etc. (Equivalent) | £2.98 |
| VC9300, 381 etc. (Equivalent) | £2.98 |
| Hitachi | |
| VT8000, VT8300, VT8500 | €4.72 |
| VT9300, VT9500, VT9700 | €4.75 |
| VT11E, VT14E, VT17E, VT19 | £3.96 |
| VT33, VT63, VT64, VT65 | £3.96 |
| Akai | |
| VS2, VS3, VS4, VS5 | £4.50 |
| Fisher | |
| FVHP615, FVHP710, FVHP725, etc. | |
| We also carry all play idlers and clutches etc. for mo | deis |
| listed plus many more. | |

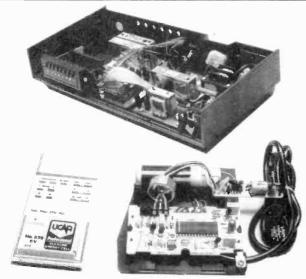
UNIT 3, PLESSEY BUSINESS PARK, TECHNOLOGY DRIVE, BEESTON, NOTTINGHAM NG9 2ND

TEL: 0602-226070 FAX LINE: 0602-431097

24HR ANSWERING SERVICE FOR ORDERS PLACED AFTER 5.30 p.m.
Please add 70p post & packing and then add 15% VAT to total

OFFICIAL ORDERS ACCEPTED FROM SCHOOLS, COLLEGES, ETC. EXPORT ENQUIRIES WELCOME.
ALL PRICE ENQUIRIES SHOULD BE ACCOMPANIED BY STAMPED ADDRESSED ENVELOPE

STAN WILLETTS Dept. 1.
37 HIGH STREET, WEST BROMWICH, WEST MIDLANDS B70 6PB TEL: 021 553 0186 OR 021 559 1437



REDIFFUSION TRANSLATOR No. 847038

8-Way "PREOMAT" T.V. Tuning of band 1-111 & UHF with AFC Mains supply 240 volt. Fully enclosed Plastic cabinet 14 \times 7½ \times 3½ inches. These Translators may be used directly into cable T.V. or modified for use with monitors or VCR or TV sound tuners. The monitors are in A1 condition, fully guaranteed, £4.99 P&P £3

Not working but complete 3 for £10 P&P £4.



GRUNDIG INFRA-RED REMOTE CONTROL VIF-K1

Consists of TRANSMITTER TPV355 & VIF-E1 (13 function) will fit Grundig 2×4 Super VIDEO. Only £4.99, brand new & boxed complete with battery. P&P £2. Circuit Diagram 75p.

MEMOREX VIDEO MEMOREX TAPES MEMOREX VIDEO TAPES VHS E180 High Standard £2.69 P&P 50p. 3 for £7.99 P&P £2. 10 for £22.50 P&P £3. V2000 (for Grundig & Philips) V360 £6.99. VCC480 £7.99 P&P £1.

VIDEOLAB E180 VHS Video Tapes £1.99 P&P 50p. 10 for £17.99. P&P £3. CB CONVERTER 40 CHANNELS (plug into 12 volt a/m Car Radio. Brand new & boxed £1.99. P&P 75p. VIDEO RECORDERS all perfect working order. SANYO £35. SONY £45. Not working but complete £15. GRUNDIG 2×4 SUPER £49, not working but complete £25. PHILIPS £15. IMMERSION HEATERS made by REMPLOY 3kw 230/50 Volt. 11 inches long. Brand new & Boxed £1.99. P&P £2. PANEL METERS moving iron Thermoplastic construction 72×72 m/m 1 amp F,S,D brand new boxed £2.99. P&P £1, 92×92 m/m £3.99. P&P £1.

ALL TYPES EQUIPMENT WANTED: VIDEOS, CAMCORDER CAMERAS, AMPLIFIERS, HI-FI'S. ANYTHING USEFUL, ANY QUANTITY

BOLTON COMMUNICATIONS PROJECT

SATELLITE TELEVISION COURSES

One Day

CITY AND GUILDS COURSE ON FIXED DISH SATELLITE INSTALLATION

(offered on behalf of the Confederation of Aerial Industries). Cost £90. Course dates: 2nd November, 14th December, 1st February, 29th March.

Venue 'The Last Drop Hotel'

Four Day SATELLITE TELEVISION **INSTALLATION COURSE**

One day a week for 4 weeks. Cost £150.

Start dates: 9th November. 1st February, 1st March.

Venue 'The Smithills Coaching House'

For further information please contact:

Terry Tudor (Project Manager), Bolton Metropolitan College, Manchester Road, Bolton BL2 1ER. Tel: (0204) 31411 Ext. 3371/3395

SOUTH WALES

NEW DELIVERIES EVERY WEEK

COLOUR TV

| DELTA | £8 WORKING |
|----------|------------------|
| PIL | FROM £15 WORKING |
| R/C | FROM £28 WORKING |
| TEXT | FROM £40 WORKING |
| PORTABLE | FROM £50 WORKING |

VIDEO

ELECTRONIC VHS FROM £70 WORKING JVC HEADS £15 RANGE OF NEW HANDSETS

ALL PRICES INCLUSIVE OF VAT

UNITS 11 & 12, TAVERNER ESTATE, CAERLEON, NEWPORT, GWENT (3 miles from M4, Junction 25)

> Ring Bob on 0633 430040

SEMPLE



SERVICE

THE ONLY APPROVED THORN TELEPRICE DISTRIBUTOR FOR E. ENGLAND

SALE

GREAT AUTUMN

DON'T DELAY PHONE TODAY

0553 766766

59 HALL RD CLENCHWARTON KINGS LYNN NORFOLK



TRADE MARK OF

GUARANTEED & WORKING EX-RENTAL STOCK

ALL PRICES QUOTED ARE FOR LOTS OF 10 OFF

| VIDEOU |
|---------------------|
| 3V30 £62.00 |
| 3V23 £65.00 |
| 3V36 £75.00 |
| TOP/L £65.00 |
| (NON THORN TYPE) |
| 3V42 P.O.A. |
| |

ALL WORKING EQUIPMENT IS SOLD WITH OUR UNIQUE 7 DAY GUARANTE

ALL PRICES QUOTED ARE EXCLUSIVE OF VAT

7 DAY GUARANTEE

VIDEOS

| SCOTLAND'S IBEX WHOLESALER OF SCOTLAND OF | | | |
|---|-------------------------------------|-----------------------------------|-------------------------------|
| FRESH STOCK EVERY WEEK | COLOUR TVs FROM £5 | DIRECT LOADS AVAILABLE | WORKING TEXT FROM |
| KT3 BASIC £25 | Delivery Service | WORKING TVs FROM £10 | DISCOUNTS FOR QUANTITY |
| WORKING G11s £18 | ALL OUR PRICES INCLUDE VAT | PHONE FOR OUR PRICE LIST | VIDEOS ALWAYS AVAILABLE |
| UNIT D/B, PROJECT 9 INDUSTRIAL ESTATE, McPHAIL STREET, GLASGOW G40 1ND [MRCLAKEAND] 041-554 7637 (Gerry) | | | |







Wiltsgrove L

TV and Video Trade Centre

TEL: 021 FAX: 021 772 766 6100

Everything under one roof in Birminghams largest TV & Video Warehouse

Fx Rental TU's

| Ev Heingi i | Vo |
|-----------------------|--------|
| all working stoc | k |
| Bush T20 | £15.00 |
| Bush T24 | £25.00 |
| Doric Mk1 | £5.00 |
| Doric Mk3 | £10.00 |
| Doric Mk4 Text | £45.00 |
| Finlandia Basic | £10.00 |
| Finlandia R/C | £18.00 |
| Finlandia Text | £40.00 |
| Grundig Basic | £35.00 |
| Grundig R/C | £50.00 |
| Grundig Text | £70.00 |
| JAPANESE | |
| Hitachi, Sony, Panas. | £30.00 |
| Korting | £10.00 |
| Philips G11 Basic | £10.00 |
| Philips G11 R/C | £20.00 |
| Philips G11 Text | £35.00 |
| Philips KT3/30B | £25.00 |
| Philips KT3 R/C | £35.00 |
| Philips KT3 Text | £55.00 |
| Thorn 9K | £12.00 |
| Thorn 96K | £18.00 |
| Thorn TX9 Basic | £25.00 |
| Thorn TX9 Text | £55.00 |
| Thorn TX10 Basic | £25.00 |
| Thorn TX10 R/C | £35.00 |
| Thorn TX10 Text | £55.00 |
| Thorn TX9/10 Stertext | £75.00 |

Ex Rental Video's

| Amstrad 7000 | £65.00 |
|---------------------|---------|
| Thorn 8930 (3U29/ | £65.00 |
| Thorn 8924 (3U23/ | £65.00 |
| Thorn 8940 | £70.00 |
| Thorn 8941 (3U31) | £90.00 |
| Thorn 8942 (3U32) | £100.00 |
| Ferguson longplay | £150.00 |
| Sharp UC9100/9300 | £80.00 |
| Sharp UC 381/383 | £85.00 |
| Hitachi UT8000/8500 | £60.00 |
| Panasonic NU333 | £65.00 |
| Panasonic NU366 | £75.00 |
| Panasonic NU7000 | £75.00 |
| Panasonic NU 7200 | £85.00 |
| Panasonic NU370 | £95.00 |
| | |

Portable Radio Cassette



14" R/C Portable £98

Autofocus Autozoom

28/29 RIVER STREET DIGBETH BIRMINGHAM B5 5SA

£425

Ferguson 3CO1

Ex Rental Ferguson Video

£150

Longplay 3043 HiFi Video

Box 50 £1.35

Hunnyu E180 Videotapes

Lifetime Guarantee

3U29/30 £65

> Microwaves **B** Stock £69.00

Spares Listing

New Quality Videoheads Special Opening Offers from £14.50

Friction components VIDEO BELTS, IDLERS, CLUTCHES, PINCHUHEELS AKAI, FISHER, GEC/HITACHI, FANASON C, PHILLIPS, SANYO, XJC, THORN

Semi Conductors STR. STK. TDA s. TA etc.

ह्मवर्ग वर्गन

Ramote Control Handarte, TV Mains Switch, Taeura, Trielera, Video Ismes, Connerte Triss, Lores, Leads, Apolio Vide Lendo, Puses etc.

VIDEO's FOR SPARES PRICES FROM £20

UNBEATABLE P.O.A.

Thorn TX10 Brand New Chassis from £20.00

We also have many more

Specialised Items 28/29. RIVER STREET. DIGBETH, BIRMINGHAM

772 2733



R/C Handsets are Extra All prices are exclusive of UAT

ASK ABOUT OUR FREE DELIVERY

LRC (SPARES)

ORDERS BEFORE 4.00 P.M. – SAME DAY DESPATCH!
LIST PRICES EXCLUSIVE OF VAT
ORDERS UNDER £50 ADD £1.00 P&P

VIDEO SPARES FAST ex-stock! U1-323 210

127 60



3/5 WHITFIELD STREET, LONDON W1P 5RA

| VIDEO HEAD REPLACEMENT HE | | ľ |
|--|--|---|
| JUCIFERGUSONETC 3HSS-V TOSHBA 9600 PANASONIC NV-3366 (4 HEAD) PANASONIC NV-330/777 PANASONIC NV-333/2000/7000 ETC SHARP UNIVERSAL SONY SLCS6/7/8000 SONY SLCS SONY SLCS6/7/8000 SONY SLCS6/7/800 | 15, 75 25, 10 40, 20 38, 45 15, 75 22, 40 17, 25 39, 42 22, 59 34, 10 31, 60 33, 44 | |
| Many More Replacement Ho | eads in Stock | l |
| HITACHI ORIGINAL | . HEADS | l |
| H18000/9000 5 VT11/14/33 5 VT63/64 5 | 458109 41.65 458161 41.65 458415 44.71 459152 41.65 459282 60.84 | |
| 1000 | 153131 | |

| ORIGINAL P VIDEO S | | |
|---------------------------------|-----------|---------|
| | | |
| NV333/366 IDLER | VXP0401 | 1.2 |
| NV333/366 (PLAY/TAKE UP) | VXP0433 | 3.0 |
| NV370/430 IDLER | VXP0521 | 2.5 |
| NV810/30/50/70 IOLER | VXP0521 | 2.5 |
| NV600/688 IOLER | VXP0515 | 3.1 |
| NV730 IOLER | VXP0581 | 3.1 |
| NV777/778 IDLER | VXP0463 | 3.1 |
| NV2000 SERIES IDLER | VXP0329 | 1.2 |
| NV2000 (PLAY/TAKE UP) | VXP0331 | 1.2 |
| NV7000 SERIES IDLER | VXP0344 | 1.2 |
| NV7000 (PLAY/TAKE UP) | VXP0343 | 5.7 |
| NVG7 G10 IDLER | VXP0521 | 2.5 |
| P. ROLLER NV333/366 | VXP0432 | - B.5 |
| P. ROLLER NV730 | VXL1154 | 7.9 |
| P ROLLER BV730 | VXL1200 | والسالة |
| P. ROLLER NV2000 | VXP0380 | W 10.5 |
| P ROLLER NV7000 | VXL0776 | 7.8 |
| TENS BAND NV333/66.777 | VX20129 | 2.8 |
| TENS BAND NV370/730 | OXZINI 66 | N 713 |
| TENS BAND NV2000/2020 *** | 20076 | 5.9 |
| TENS BAND NV7000 2200 | VX20078 | 3.0 |
| REEL MOTOR NV322/366 | 1913V51 | 15 0 |
| ORIGINAL SONY | MINEO CO | DEC |
| | | • D.C.e |
| FAF & REW ASSY, \$1,020,30/40/1 | IF100 | 5.4 |
| CHIEF OIL MY PLEADERS NOT A | | 6.6 |

SONY '5' SERIES

| 3/5 WHITFIELD S | IHE |
|---|----------------|
| ORIGINAL JVC VIDEO SPAR | ES |
| CAPSTAN MOTOR HR3660/3V22 CAPSTAN MOTOR HRD120/3V35 | 24.75 |
| DRUM MOTOR HR3660/3V22 | 24.75 24.75 |
| T/UP IOLER (LARGE) HR3660 | 5.50 |
| T/UP IDLER (SMALL) HR3660 | 5.50 |
| T/UP IDLER HR7200/3V29 T/UP CLUTCH HR7200/3V29 | 1.30 |
| REEL IDLER HR7200/3V29 | 2.96 |
| REEL IDLER HRD120/3V35 | 2.80 |
| T/UP CLUTCH HR0110/120/125 CASSETTE CARRIAGE 3V45 FT | 2.20 |
| PINCH ROLLER CALL MOOFLS | 100 |
| 46.8 11.9 41 | 1 |
| VIDEO BELT KITS (ORIGINA | W 10 |
| PANASONIC NV333,366 | |
| PANASONIC N G770/88 | 2 32 |
| PANASONIC A 20 130 870 PANASONIC N 770/30/350 | 2.62 |
| PANASONIC NVERS | 2.62 4.18 |
| PANASONIC INTEGER SPRES | 3.65 |
| PANASONIA NY 7000 SERIES | 3.65 |
| | |
| WIDEO BELT KITS (REPLACEME | NT) |
| SANYO VIC-OL | 1.65 |
| BANYO VIC-5500 | 2.10 |
| SANYO VTC 6500 | 1.78 |
| NS-HR-3330/3360/3660/3V16/22 | 2.50 |
| | |



SL C9 SL-C5/6/7/8000

| | UPPER ORUM LINES SECONSE | 22.75 |
|---|--|-------|
| | CAPSVAN MOTCHELLOST | 33.56 |
| Į | DEER KIT SLEEP | 4.80 |
| | IDLER KIT SI | 3.68 |
| ì | FWOILINGER ASSY, SUS | 2.72 |
| | FWID CIMITER ASSY SEE | 3.68 |
| i | PORCH BOLLER SLOSSE 7 | 2.48 |
| | PINCH ROLLER SLC9/C20/F1/F25/HF100 ETC. | 7.85 |
| | TENSION BAND ASSY, SLC5/6/7 | 3.48 |
| 1 | LOADING PULLEY SLC6 | |
| | | 1.80 |
| | PLEASE ASK FOR ANY PARTS NOT LISTED | |
| | Market Committee of the | |
| | OTHER MANUFACTURER'S | : |
| | | , |
| | ORIGINAL PARTS | |
| | SANYO REEL MOTOR VTC5000 | 8.97 |
| | SANYO REEL DRIVE PULLEY VTC5000 | 6.50 |
| | | |
| | FISHER IDLER ASSY FVHP615 | 5.97 |
| | HITACHI FE/REW ARM VT11/33 | 2 85 |





PHOENIX OF DONCASTER

THIS MONTH'S SPECIAL OFFER

GEC PIL STARLINES — ELECTRONIC TUNE GOOD CABINETS — OFF THE PILE £6

 K-30
 £25

 KT-3
 £20

 TX
 £25

ALWAYS IN STOCK

ELECTRONIC VHS VID — COMPLETE NON-WORKING FROM £25

PHOENIX TV WHOLESALE
UNIT 3A SANDALL LANE, KIRK SANDALL IND EST
Telephone CHERYL on 0302 890117

TELEVISIONS - VIDEOS - TELEVISIONS

VIEW-TEL

CO DURHAM

A NEW NAME IN

TRADE SURPLUS TVs

Large selection mainly

THORN — GRANADA STOCK

Discount ten or over

ALL SIZES AVAILABLE

Thousands in stock. Good quality. Fresh stock every week.

Portables, Teletext, VHS Videos, STD 20", 22", 26"

Complete loads at discount prices

All stock collected from source by our transport and handled with care.

VIEW-TEL TELEVISIONS SWAN STREET EVENWOOD

(0388) SWAN STREET, EVENWOOD, 832832 Nr. BISHOP AUCKLAND, CO. DURHAM.



THE BEST BRANDS * THE BEST PRICES * THE BEST SERVICE

WORKING CTV'S

TX BASIC (8311) £25

TX STEREO £75

HUSSAIN CENTRALTY

WORKING YCR'S

MECHANICAL FROM 135 HITACHI T/L FROM £50 HITACHI I/R REMOTE FROM £6

FST's & LATE VCR's AVAILABLE NOW! PRESTON

CHEPSTOW

SOUTHAMPTON

LEEDS

BIRMINGHAM

LONDON

★ DIRECT LORRY LOADS AVAILABLE AT DISCOUNT RATES ★

MOST MAKES OF EX-THORN & EX-GRANADA

RING NEAREST BRANCH FOR FULL DETAILS. EXPORT ENQUIRIES WELCOME.

HEAD OFFICE: 48-52 PERSHORE STREET, BIRMINGHAM ☎ (021) 622 1023/1517 LONDON: ROYAL LONDON ESTATE, NORTH ACTON ROAD ☎ (01) 961 5005

PRESTON: UNIT 439, WALTON SUMMIT (M6 JUNCTION 29) & (0772) 312101

LEEDS: UNIT 2, COPLEY HILL ESTATE, WHITEHALL ROAD & (0532) 422774

CHEPSTOW: BULLWARK INDUSTRIAL ESTATE & (0291) 271 000

SOUTHAMPTON: 500 MILLBROOK ROAD, MILLBROCK & (0703) 777254

Note: Above prices subject to VAT & quantity — Handsets extra

ATTENTION ATTENTION

JOHN CARTER ELECTRICAL LTD **ANNOUNCES A**

MASSIVE CLEARANCE SALE

TVs FROM £5 ONLY

OVER 2,000 SETS MUST GO

TO MAKE WAY FOR OTHER STOCK

HUGE RANGE OF VIDEOS

RIDICULOUSLY LOW **PRICES**

ENQUIRIES CONCERNING B GRADE STOCK WELCOME DIRECT LOADS DELIVERED FROM SOURCE **ALL SETS UNTESTED**

JOHN CARTER (Electrical) LTD FURNACE ROAD, GALLOWS INN, **ILKESTON**

Phone: 0602 303124



Hameg Oscilloscope HM1005 Triple Trace 100MHz Delay Trinebase C726 Hameg Oscilloscope HM604 Dual Trace 60MHz. Delay Sweep Sweep Namep Josofiloscope HM203 6 Dual Trace 20MHz Component Taster Laster Las

Oscilloscope 2235 Dual Trace 100MHZ

bbe type 3300A TTL/Cmos (P&P £3) scillator LFM3 10HZ-10MHZ Sine/Square 15 Freg Counter 10HZ-520MHZ (Crystal 0

TELEPHONES YES! REAL DIAL TYPE TELEPHONES — that don't slide around the desk. Type 80 746 supplied with standard BT plug (used). Quantity Discount OMLY C5 (P&P £3) OSCILLOSCOPES PROBES, Switchable ×1, ×10 (P&P £3) £11

USED EQUIPMENT - WITH 30 DAYS GUARANTEE. MANUALS SUPPLIED IF POSSIBLE. This is a VERY SMALL SAMPLE OF STOCK. SAE or Telephone for Lists. Please check available before ordering. CARRIAGE all units £16. VAT to be added to Total of Goods & Carriage. STEWART OF READING

110 WYKEHAM ROAD, READING, BERKS RG6 1PL Telephone: 0734 68041 Fax. 0734 351696

Callers welcome 9 am-5.30 pm Mon.-Fri. (until 8 pm Thurs.)



GAMMA U.K. LTI

1750/1754 Pershore Rd., Cotteridge, Birmingham, B30 3BH Telephone 021-458 4093

VIDEOS! VIDEOS!

Fully serviced video recorders with bulbs, belt & idlers changed and cabinets resprayed ready for retail. Example 3V29 £70. 3V30 £70. 3V40 £75. 3V35s £100 + many more P.O.A.

Export enquiries welcome especially to AFRICA

We're only a phone call away so ring today and place your order.

Many different types of TVs also available.

All prices plus VAT.

PORTANT ANNOUNCEM

The Directors of the Display Electronics Group are pleased to announce that we have acquired the business and assets of the CRT manufacturing unit of Centronic Ltd. Centronic Ltd. have been established as CRT manufacturers for more than 40 years and the business will be continued by a new company New Century Electronics Ltd.

Display Electronics Ltd. have been established as CRT Regunners/Remanufacturers for more than 20 years.

As a result of the experience thus consolidated into the one group we are able to offer, uniquely, a total CRT engineering capability. Although the two companies' activities are complimentary they will be run as separate enterprises. Manufacturing/ product development will be undertaken by New Century Electronics at our Uxbridge (near London Airport) head office. Regunning/remanufacturing will be continued at our Iver (Bucks.) factory.



Manufacturers of CRTs for Data - Telecine - Avionic - Radar - Head Up/Down and many other applications.

Proven performance from a standard product range and a custom capability make New Century Electronics the obvious choice for your cathode ray tube needs.

NEW CENTURY ELECTRONICS LTD

SWAN WHARF, WATERLOO ROAD, UXBRIDGE UB8 2RA TELEPHONE 0895 55800 • FAX 0895 55619



- ★ Do you use cathode ray tubes?
- ★ Can't find a replacement or shocked by the cost?
- ★ It may well be that a rebuilt tube will solve your problem.

Come to one of the most experienced firms in the business. We have been rebuilding cathode ray tubes for industry, broadcasting authorities, major airlines, M.O.D., universities, and, of course, the TV trade in general since the '60's.

DISPLAY ELECTRONICS LTD

ELIZABETH WORKS, THORNEY LANE NORTH, IVER, BUCKS. TELEPHONE 0753 630137 • FAX 0895 55619

Customers are requested to despatch correspondence/inward goods to our head office facility at Swan Wharf, Waterloo Road, Uxbridge UB8 2RA.

N.W. LONDON'S LEADING VIDEO SPARES DISTRIBUTOR

EX-RENTAL

BASIC — REMOTE — TEXT KT3 ● K30 ● TX9 ● TX10 ● GRUNDIG ● PANASONIC

ALSO AVAILABLE AS 'TUBE PACKAGE' Comprising rebuilt tube and working set at discount prices.

SOUTHBRIDGE TV CENTRE

120 SELHURST ROAD, LONDON SE25 6LL Telephone: 01-771 3535

APOLLO LANCASHIRE

NATIONWIDE MAIL ORDER

LOCAL DELIVERY - 2 YR GUARANTEE

A47 342/343X - 470 BCB22/CTB22/BGB22/ 470-ESB22/EFB22/EFB22/FTB22 A51-220X/192X A51-161X/162/163/168 510-JKB22/JEB22/JDB22/JGB22/ALB22/GLB22 510-VLB22/DTB22/001/RFB22/RCB22/SFB22 A51-540

PHONE FOR QUOTE

SONY TYPES £69 470DLB22/FWB/KHB/KTB KLB-520SB22/NB/RB/XB A49JHT00X-570DB22/EB/HB GB/.IB-A53.JBW01X/.ICG00X JB00X-680CB22/DB/EB (£79)

14" PORTABLES £59 37-550/2/3/4-A37-570/580/590

CASH PAID FOR ALL SIZES SONY GLASS + 66-510/540 560 DZB PIL TYPES

PLEASE PHONE BEFORE CALLING LOCAL DELIVERY FROM ACCRINGTON, LANCS. Phone enquiries and letters to:

Apollo, The Potters Wheel, Mullion Cove, Mullion, Nr. Helston, TR12 7ET. 0326 240781

| AKA VS109/201/202/203/301/303 | £23.50 |
|--|----------------------|
| ALBA 4000/GOLDSTAR | £23.50 |
| AMSTRAD VCR4500/5200/9000 | C18 05 |
| AMSTRAD VCR4600/7000 | C20.65 |
| FERGUSON/JVC UNIVERSAL 3MSSV | C12.63 |
| EEDCH CON 2V22/1VC LD7CE | 411 |
| FERGUSON 3V32/JVC HR7655. FERGUSON 3V42/44/45/46/47/5C/JVC HRD140/141/143/150/157 | 4 Head £36.54 |
| FERGUSON 3V43/JVC HRD725/"55 | £20.45 |
| FERGUSON 3V48/JVC HRD565 | 4 Hand C44 35 |
| FISHER UNIVERSAL FVHP520/720 ETC | 4 Head £44.25 |
| PISHER UNIVERSAL FWHP520/720 ETC | £20.65 |
| HITACHI VT5000/6500/7000/800@/8500/8700/9000 ETC | £20.65 |
| HITACHI VT11/14/33/34 ETC | £18.95 |
| HITACHI VT7/17/19/35/38/39 | 4 Head £37.50 |
| HITACHI VT8/56/65/12C/130/135-220 | P.O.A. |
| MIT SURISHI HS301/202/303/304F310/320/700 | C22 00 |
| PANASONIC NV180 | 4 Head £40.59 |
| PAMASONIC NV180 PAMASONIC NV333/2000/7000/#600 UNIVERSAL 3HSSN | £12.97 |
| PANASONIC NV366 | 4 Head £31.00 |
| PANASONIC NV366 | £17.10 |
| PANASONIC NV430/NV460 | £21.95 |
| PAHASONIC NV688/788 | €45.00 |
| PANASONIC NV730 | 4 Head £31 00 |
| PAHASONIC NV777/N'/330 | 3 Head £26.00 |
| PANASONIC NV810 | £39.75 |
| PANASONIC NV810 GENUINE | 551.00 |
| PANASONIC NV850/870 GENUINE | £57 OO |
| PANASONIC NVG-7/9/10/11/12 | C28 45 |
| PANASONIC NVG-15/400 GENLINE | C40.75 |
| PANASONIC NVG-18 | £42.45 |
| PANASONIC NVG-18. PANASONIC NVG-20/21/22/25/28. | 640.59 |
| PANASONIC NVG-30/40/130 | C27 EA |
| PA VASONIC NVG-33/45/46 PA VASONIC NVG-33/45/46 GENUINE | £40.50 |
| PANASONIC NVG-33/45/46 GENUINE | POA |
| SANYO VTC5000/5100/5150/5300/5350/5370/5400 ETC | 627.60 |
| SANYO VTC5500/9300/9350/9355/9455/9500 | 630.00 |
| SANYO VHB1100 | DO A |
| SANYO VHR1100. SANYO VHR1110/1150/1300/2300 | C26.05 |
| SANYO VHR1500 | C42 60 |
| SANYO VHR3100/3200/3400/3500 | 627.00 |
| SANYO VHR3100/3200/3400/3500 SAMSUNG VB900/910/VX510/520/616 ETC UNIVERSAL | 2114000 60 |
| SAISHO/HINARI UNIVERSAL | 2 Head £22.50 |
| SPISHO/HINAHI UNIVERSAL | 2 Head £20.95 |
| SHARP VC105/108/205/208/40#/405/408/500/582/583/651 SHARP VC200/220/300/381/38=/336/387/388/481/482 ETC | £19.00 |
| SHARP VC200/220/3C0/381/38=/336/387/388/481/482 ETC | £19.00 |
| SHARP VC483/486 SHARP VC6000/6300 7300/77CD/7750/8300 | £34.50 |
| SHAHP VC6000/6300 7300/77CD/7750/8300 | |
| SONY UNIVERSAL 1 PIN DSR26 | £15.50 |
| SONY SLF1/30/60/C2)/30/40 D-3R35R | £18.95 |
| SONY SLC8/9/60/80/SLF200 ETC | £32.45 |
| TOSHIBA V21/31/33/50/51/53/9500 | £20.95 |
| TOSHIBA V71/73/74/75/81/82/E3/84/85/86/87/93 | £22.50 |
| TOSHIBA V71/73/74/75/81/82/E3/84/85/86/87/93 WE CARRY HUNDREDS OF VIDEO SPARES INC. IDLERS, CLUTCHES, MOTORS ROLLERS, ORIGINAL SONY SWITCHES FTC | S, BELT KITS, PINCH- |

NEW CATALOGUE OUT NOW AMILABLE FIRE OF CHARGE TO THE FRACE NEW ACCOUNTS

ALEX-Stock Items despetched same day. No minimum order value. Non account holders can pay by

Visa or Access credit safe the safe and 90p piles VAT to all above prices.

RI-IG US FOR THE BEST QUOTE

ON HAND PCRTABLE & MOBILE CELLULAR PHONES

OMEGA ELECTRONICS

NEW ADDRESS: OMEGA ELECTRONICS 304 CROWN HOUSE, NORTH CIRCULAR ROAD LONDON NW10 7PN

Tel: 01-965 5748 Fax: 01-963 0351

Personal Callers are advised to telephone their orders before collecting

ASK

FOR

OUR:

CATALOGUE

TRADE WAREHOUSE *

TERRIFIC SELECTION

TV'S AND VIDEOS

UNBEATABLE PRICES



FULLY RE-CONDITIONED EX-RENTAL **READY FOR RETAIL OUTLETS**



GOOD VARIANTS; BASIC; TX9s; TX10s; NON-TEXT; TEXT; STEREO SUPERSOUND: PORTABLES; ETC.

3V23s; 3V30s; 8941/8944; 3V32/8942; NON-THORN; THORN; REMOTE CONTROL; MECHANICAL; ETC.

* GOOD DISCOUNT FOR QUANTITIES *

CONTACT

YORKSHIRE

KEN COXON TVs

UNIT 10, SHAW LANE INDUSTRIAL ESTATE. **DONCASTER DN2 4SE**

Telephone: (0302) 342932

NORTH EAST

DONNELLY'S TVs

THE CHAPEL

FRONT STREET, TANTOBIE **COUNTY DURHAM DH9 9RE**

Telephone: (0207) 282435

If so come to Teletraders

We believe we have the best range and display of working stock that you are likely to see anywhere.

Why not come along and see for yourself You won't be disappointed

★ Guarantee's available on all sets ★

TELETRADERS

Brunel Industrial Estate Newton Abbot, Devon Tel. 0626 60154

SLOPER RD, LECKWITH, CARDIFF PHONE 0222 344754

If you buy new televisions & Video's, SAVE UP TO £70 and buy boxed, guaranteed seconds.

Quality ex-rental TV & video at GREAT DISCOUNTS, try before you buy.

Phone for our latest price list with all our monthly up to the date bargains.

CCMPUTER SOFTWARE

DO YOU STILL USE A CARD SYSTEM? DO YOU FIND IT DIFFICULT TO KNOW YOUR ARREARS TOTAL AT ANY **GIVEN TIME?**

If you do then we recommend our new computer TV and Video Rental package. This package includes automatic updating of each customer's record
 automatic updating of each customer's arrea

* alphabetical print-out of each customer's arrears and payments missed
 * total arrears immediately available
 * easy to use and operate.

Operates on all IBM compatibles running under MS-DOS. Free demonstration disc available

WILLIAM J THOMPSON **Donaghanie Post Office** Beragh Co. Tyrone Telephone Beragh 214 (0662 72)

| | | 200 | - | | - | | | | - | | _ | | - | | - | THE RESERVE THE PERSON NAMED IN | AND RES |
|-------------------|----------------|-------------------|----------------|--------------------|----------------|------------------|----------------|--------------------|----------------|---------------------|----------------|----------------------|----------------|-------------------------------|--------|--|---------------|
| AN103 | £1.95 | AN6610 | £1.95 | BA1320 | €1.25 | HA11749 | £4.75 | LA4440 | €2.75 | | £7.75 | STR6020 | €6.75 | TDA3540 | €3.80 | | |
| AN127Q | \$2,20 | AN6676 | £7.50 | BA1330 | £1.75 | HA11750 | €5.00 | LA4445 | £2.75 | STK084 | £7.60 | TA7063P | £1.50 | TDA3541 | €3.60 | T. POWELL | |
| AN203 | \$2.20 | AN6677 | £6.30 | BA1360 | £1.80 | HA11753 | €8.50 | LA4460 | 21.80 | STK430 | £5.50 | TA7066P | £1.50 | TDA3560 | £4.50 | | |
| AN210 | £1.75 | AN6780 | €2.30 | BA5102A | €2.75 | HA11758 | €8.50 | LA4461 | £1.80 | STK431 | £5.95 | TA7073AP | \$2.75 | TDA3561A | £4.95 | THE RESERVE OF THE PARTY OF THE | |
| AN211A | £2,30 | AN6811 | £1.60 | BA5204 | €2.75 | HA11768 | €4.50 | LA4500 | £2.50 | STK433 | £5.25 | TA7074P | £1.95 | TDA3562A | 00.03 | 16 DADDINGTON COLEN | |
| AN217B | \$2.20 | AN6873 | €4.50 | BA5402A | £2.75 | HA11788 | £4.50 | LA4505 | £2.80 | STK435 | £5.50 | TA7122AP | €0.90 | TDA3651 | €2.70 | 16 PADDINGTON GREEN | 1 |
| AN228W | | AN6875 | €3.50 | BA5406 | £3.20 | HA11816 | €6.50 | LA4507 | £4.25 | STK436 | £5.25 | TA7136P | 21.00 | TDA3652 | €3.30 | LONDON W2 1LG | |
| | \$2.90 | AN6884 | £2.75 | | | | | | | STK437 | £6.50 | TA7140P | £1.75 | | £3.75 | LUNDUN WZ ILU | |
| AN236 | £2.50 | AN7105 | €2.50 | BA5408 | \$2.75 | HA11828 | €9.50 | LA4508 | €2.85 | STK439 | £5.95 | TA7145P | €2.50 | TDA4420 | | Tol: 01.722.0246 | |
| AN240P | £1.50 | AN7106K | €2.95 | BA6104 | £2.80 | HA12001 | £6.50 | LA4520 | €2.50 | STK441 | £8.95 | TA7193P | €4.00 | TDA4500 | €3.95 | Tel: 01-723 9246 | MINERO, |
| AN241P | £1.50 | AN7110 | £1.50 | BA6124 | £2.80 | HA12002 | £2.95 | LA4570 | €3.75 | STK443 | £8.95 | TA7205AP | 21.00 | TDA4600/2 | £2.95 | | |
| AN259 | £2.75 | AN7111 | £1.50 | BA6208 | €2.95 | HA12035 | £9.50 | LA5112 | €1.85 | STK457 | ₹7.50 | TA7207P | £1.75 | TDA4600/2D | £2.95 | VIDEO HEADS | |
| AN260P | £2.20 | AN7112E | £2.95 | BA6209 | €3.75 | HA12038 | £6.75 | LA5527 | £1.95 | STK459 | ₹7.75 | TA7208P | £1.75 | TDA7270 | €2.20 | JVC/FERGUSON 3HSS | £15.00 |
| AN262 | £1.60 | AN7114E | €2.50 | BA6304 | €2.20 | HA12402 | €2.95 | LA6324 | €2.50 | STK461 | 28.50 | TA7217AP | 21.60 | UPC575C | £1.00 | | |
| AN264 | €3.75 | AN7115E | £1.60 | BX342 | £5.00 | HA12413 | \$2.75 | LA6358S | €1.20 | STK463 | £9.50 | TA7220P | €2.50 | UPC1001H | €2.20 | PANASONIC 4HSS | £15.00 |
| AN271A | £2.50 | AN7116 | £1.50 | HA1124A | \$2.75 | HA13001 | €2.95 | LA6458D | £1.20 | STK465 | 29.95 | TA7222AP | 11.30 | UPC1018G | £1.95 | HITACHI VT11/14/33 | £21.00 |
| AN274 | £2.75 | AN7120 | £1.50 | HA1124DS | €3.50 | HA13007 | £4.95 | LA7016 | £2.75 | STK501 | £6.25 | TA72232 | £2.30 | UPC1025H | £2.30 | HITACHI VT5000 | £22.00 |
| AN277 | \$2.50 | AN7130 | £1.30 | HA1125 | £1.75 | HA13402 | £4.95 | LA7031 | £2.75 | STK0025 | €4.95 | TA7225P | €3.20 | UPC1031H | | HITACHI VT8000/9000 | £21.00 |
| AN295 | £3.60 | AN7131 | €2.75 | HA1137W | £1.75 | HA13432 | £4.50 | LA7032 | Σ4.50 | STK0029 | £4.75 | TA7227P | \$2.20 | UPC1032H | | HITACHI VT7/17/19 | £38.00 |
| AN301 | | AN7140 | \$2.20 | HA1144 | €4.25 | LA1111 | £0.95 | LA7215 | \$2.75 | STK0039 | €4.75 | TA7229P | €3.25 | UPC1158H | CB 06 | SHARP Most models not 6300/7300 | \$22.00 |
| | £3.50 | AN7143 | \$2.95 | HA1151 | £2.50 | LA1130 | £2.75 | LA7224 | £2.95 | STK0040 | €6.25 | TA7230P | £1.95 | UPC1185H | \$2.50 | | |
| AN302 | £3.30 | AN7145M | €2.50 | HA1156W | €1.20 | LA1140 | €2.20 | LA7505 | £2.95 | STK0049 | 26.50 | TA7232P | 12.95 | | | SANYO VTC5000 | £36.00 |
| AN303 | £2.75 | AN7146M | \$2.80 | HA1167 | £3.75 | LA1222 | €1.00 | LA7507 | \$2.95 | STK0059 | £7.00 | TA7233P | €2.95 | UPC1188H | \$2.75 | AMSTRAD/SAISHO | \$22.00 |
| AN305 | €3.50 | AN7149N | €2.95 | HA1196 HA1197 | £1.75 £3.70 | LA1230 LA1231 | £1.50 £2.00 | LA7520 LA7521 | £3.25 | STK0060H STK0080 | £9.50 | TA7240AP TA7241AP | £2.95 £2.95 | UPC1225H | \$2.75 | 30141 D31130 | €20.00 |
| AN313U | £2.95 | AN7154 | £1.90 | | | LA1231 LA1240 | | LA7751 | £4.50 £4.75 | STK0080 STK1060 | £7.75 £7.95 | TA7241AP | | UPC1230H | €2.50 | TOSHIBA 9600 | £23.00 |
| AN315 | €2.30 | AN7156N | €2.50 | HA1199 HA1319 | £1.85 £2.50 | LA1240 | £1.95 £2.95 | LA7755 | £4.75 | STK2025 | £7.50 | TA7270P | £5.50 £2.75 | UPC12630 | €2.50 | | |
| AN316 | €3.75 | AN7158N AN7160 | £3.25 £3.75 | HA1366W | £1.80 | LA1250 LA1353 | £2.50 | LA7755 LA7800 | £3.20 | STK2028 | £7.50 | TA7271P | 12.75 | UPC1277H | £2.75 | | |
| AN318 | £4.95 | AN7161 | £3.75 | HA1366WR | £1.85 | LA1365 | £1.50 | LA7800 | £2.95 | STK2029 | £7.30 | TA7272P | £2.95 | UPC1278:H | £2.75 | VIDEO SPARES | |
| AN337 | £5.25 | AN7166 | £3.75 | HA1367 | £3.25 | LA1368 | \$2.50 | LA7806 | \$2.75 | STK2038II | ₹9.50 | TA7273P | €3.20 | UPC1363C | \$2.75 | JVC Idler PU47752 | £4.95 |
| AN340P | £1.50 | AN7168 | 12.75 | HA1368 | £1.90 | LA1385 | £1.95 | LA7808 | \$2.95 | STK2125 | £6.75 | TA7274P | £2.95 | UPC1364C | £4.75 | JVC Pinch Roller | 12.95 |
| AN360 | £1.30 | AN7178 | \$2.95 | HA1368R | £1.95 | LA1387 | £3.60 | LA7820 | 12/75 | STK2129 | €6.75 | TA728CP | £3.50 | UPC13650 | £3.60 | | |
| AN362L | £1.60 | AN7213 | £1.95 | HA1372 | €3.50 | LA1460 | €2.50 | LA7910 | £2.20 | STK2230 | €6.50 | TA7281P | \$2.95 | UPC1384C | €3.50 | HITACHI Idler VT11-14-17 | £1.75 |
| AN363N | €3.50 | AN7218 | £1.75 | HA1374 | \$2.50 | LA1464 | €3.20 | LA7920 | £1.75 | STK2240 | ₹9.50 | TA7282AP | \$2.95 | UPC1387C | €2.50 | HITACHI Idler Play VT8000 | €2.75 |
| AN366P | £1.70 | AN7222N | €3.50 | HA1377 | \$2.20 | LA2100 | €2.95 | LB1405 | 12.20 | STK2250 | 29.50 | TA7283AP | \$2.95 | UPC1391H | £1.50 | HITACHI VT8000 İdler F/F/Rew. | £1.85 |
| AN374P | \$2.20 | AN7223 | £3.95 | HA1384 | €3.95 | LA2101 | £3.30 | LB1409 | 22.95 | STK3041 | €6.50 | TA7288P | \$2.95 | UPC1394C | £1.95 | HITACHI VT9000 Play Idler | \$2.95 |
| | | AN7224 | £3.50 | HA1388 | £3.50 | LA3160 | £1.50 | LC4066B | £2.95 | STK3042 | €6.50 | TA7299P | \$2.95 | UPC2002 | | HITACHI Pinch Roller 8000/9000 | \$2.95 |
| AN377 | £2.00 | AN7256 | €3.50 | HA1389 | \$2.20 | LA3201 | €0.95 | LC7130 | €3.50 | STK3044 | £5.95 | TA7317P | \$2.75 | UPC4558C | 20.90 | | |
| AN610P | £1.80 | AN7273 | 23.95 | HA1389R | £2.20 | LA3210 | £0.75 | LC7131 | €3.75 | STK3062III | £6.75 | TA7328P | €2.20 | | | | £1.95 |
| AN612 | £1.80 | AN7310 | €1.20 | HA1392 | £2.50 | LA3220 | £2.95 | LC7132 | 24.00 | STK4026 | €5.75 | TA7343AP | €2.95 | BC639 | £0.22 | JVC Drum Motor SANYO Capstan Motor SANYO Reel Motor SANYO Reel Drive Pulley SANYO Pinch Roller 5000/5300 | £22.50 |
| AN5010 | €4.75 | AN7311 | £1.20 | HA1394 | £2.95 | LA3300 | €1.65 | LC7136 | £3.75 | STK4060 | €6.50 | TA7358P | £2.80 | BC640 | £0.22 | SANYO Capstan Motor | \$29.50 |
| AN5151N | £6.50 | AN7410 | €3.00 | HA1396 | €3.75 | LA3301 | £1.30 | LC7137 | £4.50 | STK4131II | £6.75 | TA7607AP | £2.95 | BFR90 | £0.70 | SANYO Reel Motor | £8.00 € |
| AN5265 | €3.20 | AN7415 | \$2.95 | HA1397 | £2.75 | LA3310 | €2.75 | LC7800 | €3.95 | STK4141II | ₹7.50 | TA7608CP | €3.95 | BFR91 | £1.201 | SANYO Reel Drive Pulley | €5.00 |
| AN5410 | £5.50 | AN7420 | €3.25 | HA1398 | £2.75 | LA3350 | £1.30 | M5134P | £3.25 | STK415111 | £7.50 | TA7609P | \$2.70 | BFY90 | €0.50 | SANVO Pinch Roller 5000/5300 | £5.95 |
| AN5411 | £3.50 | BA301 | 20.80 | HA1457W | £2.75 | LA3361 | £1.20 | M5155P | £1.85 | STK4332 | £5.75 | TA7613AP | €2.75 | BR303 | £1.50 | SANYO Pinch Roller 9300 | £4.95 |
| AN5510 | \$2.75 | BA311 | £0.95 | HA11215W | €4.35 | LA3370 | €2.80 | M51102L | €3.95 | STK4352 | €6.50 | TA762%P | \$2.95 | BRY56 | £0.20 | | |
| AN5512 | £2.95 | BA313 | 98.03 | HA11219 | £3.25 | LA4030P | €2.00 | M51104L | 23.95 | STK4392 | £7.50 | TA764@AP | £1.75 | BT106 | £1.00 | SONY Capstan Motor 1100 | €28.75 |
| AN5612 | €3.75 | BA314 | ₹2.20 | HA11221 | £2.75 | LA4031P | £1.95 | M51513 | £1.80 | STK4803 | €8.50 | TA7658P | £1.75 | BU208A | £1.20 | | |
| AN5620X | €3.50 | BA318 | £1.50 | HA11223W | €3.80 | LA4032P | £1.90 | M51514 | £1.95 | STK4833 | ₹9.50 | TC9106BP | £4.95 | BU2080 | \$1.80 | ENQUIRIES OTHER ITEMS | |
| AN5701 | £1.80 | BA328 | €2.50 | HA11225 | £1.95 | LA4100 | £1.20 | M51515BL | €2.50 | STK4843 | 28.95 | TD62105P | £3.50 | BU326A | £1.95 | LITACITICO OTTICITIEMS | |
| AN5722 | £1.60 | BA333 | £1.50 | HA11226 | £4.50 | LA4101 | 00.12 | M51516BL | €2.80 | STK5211 | €6.75 | TDA1010A | £2.25 | BU500 | £1.80 | LIMINGER AL TRIDICOS | 00.00 |
| AN5730 | £1.85 | BA335 | ₩3.60 | HA11235 | 52.30 | LA4102 | £1.40 | M51518L M51521L | \$2.20 | STK5315 STK5324 | £6.75 | TDA1011A TDA1074A | £2.50 £2.75 | BU508A | £1.80 | UNIVERSAL TRIPLERS | €5.50 |
| AN5732 | £1.85 | BA340 | 52.50 | HA11251 | | LA4110 | £1.75 | M51521L MB3705 | £1.90 | STK5324 STK5325 | £5.75 | TDA1W4A | £1.20 | 2N3055 | €0.50 | | 1 |
| AN5750 | £3.75 | BA343 BA402 | £2.75 | HA11401 HA11423 | £2.80 £4.75 | LA4112 LA4120 | £1.75 £2.95 | MB3705 MB3712 | £1.80 £1.50 | STK5421 | £6.75 | TDA1170N | £1.50 | 2N3773 | £1.50 | CASSETTE MOTORS | |
| AN5753 | £1.95 | BA402 BA403 | £0.95 | HA11423 | | LA4120 | £2.20 | MB3712 MB3713 | £1.60 | STK5421 | £6.75 | TDA1170N | £1.50 | 2SA733 | £0.40 | 6-9-12-13.2 Volts C.W. | €3.45 |
| AN6250 | £2.30 £3.70 | BAS11A | £1.85 | HA11701 | | LA4126 | \$2.60 | MB3714 | £2.95 | STK5471 | €6.50 | TDA1510 | £4.50 | 2SA1104 | €2.50 | 12-13.2 Voits C.C.W. | €3.45 |
| AN6326N AN6327 | £4.75 | BA5114 | £1.00 | HA11703 | | LA4126 | £1.95 | MB3722 | £3.50 | STK5476 | €6.75 | TDA1515 | £4.50 | 2SA1104 2SA1106 | £2.75 | 12 10:2 10:10 0:0:11 | 20.43 |
| AN6328 | £4.75 | BA516 | £1.90 | HA11704 | | LA4140 | 20.90 | MB3730 | £2.50 | STK5720 | 26.80 | TDA1515A | £2.50 | | | CACCETTE UEADO | |
| AN6326 AN6330 | \$2.95 | BA521 | £1.80 | HA11705 | | LA4145 | £1.70 | MB3731 | €3.50 | STK5730 | £4.25 | TDA1908A | £1.75 | 2SB536 | 20.95 | CASSETTE HEADS | |
| AN6340 | £7.85 | BA524 | £2.75 | HA11706 | | LA4160 | \$2.40 | MB3756 | £2.60 | STK7216 | £6.50 | TDA2002 | 08.03 | 2SB546A | €1.56 | Mono £1.50 Auto Rev. | £2.75 |
| AN6341N | £4.00 | BA526 | £3.50 | HA11710 | | LA4170 | €3.50 | MB3759 | £2.30 | STK7308 | 25.95 | TDA2003 | £0.90 | 2SC461 | 20.35 | Stereo £2.50 | |
| AN6342N | £2.50 | BA527 | £1.75 | HA11711 | | LA4178 | £2.50 | MB8719 | 23.85 | STK7404 | €6.95 | TDA2004 | £2.20 | 2SC1364 | £0.5₽ | | $\overline{}$ |
| AN6344 | €4.75 | BA532 | £1.60 | HA11713 | €6.50 | LA4182 | \$2.20 | STK011 | €3.95 | STK8250 | €8.95 | TDA2005 | £2.75 | 2SC1942 | €2.95 | Enquiries invited for any Japanese I.Cs. As we have in | nported |
| AN6350 | ₹7.50 | BA536 | £2.50 | HA11714 | | LA4183 | £2.95 | STK014 | ₹7.25 | STK825011 | £10.75 | TDA2006 | £1.50 | 2SC1969 | £1.75 | for over 10 years | |
| AN6356N | £3.85 | BA546 | €2.20 | HA11716 | £4.75 | LA4192 | £1.95 | STK015 | £5.20 | STR380 | £5.80 | TDA2020 | £1.50 | 2SC2166 | £1.8k | ITEMS DESPATCHED WITHIN 48 HOURS | |
| AN6357N | £4.95 | BA547 | | HA11717 | | LA4201 | £1.60 | STK016 | €6.25 | STR440 | €5.80 | TDA2030 | £1.50 | 2SC2580 | \$2.75 | Please add 70p post and packing and then add 15% VAT | to total |
| AN6360 | €4.50 | BA612 | £1.80 | HA11718 | £4.75 | LA4220 | £1.50 | STK025 | £7.50 | STR441 | €5.80 | TDA2:70 | €2.75 | 2SC2581 | £2.96 | | io iotai. |
| AN6362 | £5.50 | BA631A | | HA11724 | | LA4230 | | STK043 | £10.50 | STR451 | £5.80 | TDA2581 | €2.50 | 2SC3156 | €3.50 | Callers by appointment: | |
| AN6363 | £8.50 | BA656 | €4.50 | HA11727 | | LA4420 | £1.75 | STK077 | €6.50 | STR2012 | £6.75 | TDA2611A | £1.35 | 2SD401A | £1.50 | opening times 10am-5pm, Mon-Fri, 9-12 Sats. | |
| AN6371 | £4.25 | BA843 | €4.50 | HA11745 | | LA4422 | | STK078 | €6.75 | STR4090 | €6.75 | TDA2653A | €3.80 | 2SD401A 2SD1398 2SD1453 | €2.50 | 1004 100500 10050000 100 VE FE | ** ** |
| AN6387 | £5.95 | BA1310F | £1.75 | HA11747 | €9.50 | LA4430 | £1.50 | STK080 | £7.50 | STR4211 | €6.75 | TDA3505 | €5.20 | 2501453 | £1.85 | VISA/ACCESS ACCEPTED MIN. TELEPHONE ORDER | E5.00 |
| 4 | - | | | - | | | | | _ | | | | | | | | |

New and rebuilt for most makes of T.V.

including: Hitachi, Panasonic, Philips, Thorn, Toshiba, Sharp, Sony Mullard 20AX, 30AX, 45AX, F.S.T.

Special offer: 14" Colour Tubes from £39 + V.A.T.

Two year guarantee with a four year option. Price list available on request

EXPRESS T.V. SUPPLIES

The Mill, Mill Lane, Rugeley, Staffs. 0889-577600

South-West

Bristol

(AJC)

London

JVC

Zmm

Maring THORN

Zuns

Zwwy Z One W Z

Z RINGE Z

ZMMZ

PHILIPS

Zmm &

HITACHI

nms

0454-316285

0395-266210 01-863 9371

T.V./Video Recorders Rental Agreements **Hire Purchase/Credit Sale Agreements** For details and quotations contact:

ess crealt Limite:



Colonnade House, High Street Worthing, Sussex BN11 1NZ Tel: (0903) 820968, Fax: (0903) 821194

MARSTALL LTD

TV & VIDEO WHOLESALERS 38 HORNSBY SQUARE SOUTHFIFLDS IND. ESTATE, LAINDON, ESSEX

> FOR A LARGE SELECTION OF **RECONDITIONED EX-RENTAL** THORN TVs + VIDEOS PLUS MANY OTHER MAKES AT



NEW & SECOND HAND SPARES ALSO AVAILABLE

QUANTITY DISCOUNTS

OPEN 9 a.m. - 6 p.m. MONDAY - SATURDAY

DELIVERY SERVICE THROUGHOUT UK

COME AND PAY US A VISIT AT OUR **NEW LARGER** PREMISES

(JUST OFF M25 JUNCTION 29)

Don't Delay Phone TODAY! 0268-412711



SUMMY

SHARP

Zhani &

My

SONY Sony &

SPORTABLE &

My

FRONT Z & TOP LOADER

3 Miny

DECCA Z DECCA

OIGIVISION

My



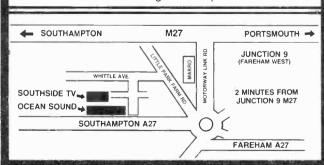
UNIT 8, APPLE IND. EST., WHITTLE AVE., SEGENSWORTH WEST, FAREHAM OFF JUNCTION 9, M27

HANTS. TEL. (0489) 577251 24HR

SIMPLY THE WHOLESALE SUPPLIER OF THE BEST WORKING EX-RENTAL TV's AND VIDEO RECORDERS.

★ FREE HOLIDAY VOUCHERS OR DISCOUNTS ★

Opening times: Mon-Fri 10am-5.30pm. Sat Mornings 10am-1pm.



74

REBUIL **COLOUR TUBES**

| PHON | LECTROST Road, Lo | ON ondo | ICS LTI on SE25 6LL 3535 |
|---|---|----------------|---|
| TV LINE OUTPUT PRICES INCLUDE ALL NE | TRANSFORM | IERS | |
| DECCA '30' series Bradford colour 10.00 80 series colour 8.50 100 series colour 8.50 | PYE 725-741 CT 200 KT REDIFFUSION Doric Mk. TANDBERG CTV 2-4-126 | | WINDINGS T20a T22, T26 Pri & Sec Z718 primary state 18" or 22" Z718 EHT overwind |
| Fidelity ZX2000 14"/16"/20" 15.20 Fidelity ZX 22"/26" 27.00 Fidelity FTV12 10.00 | CTV 3-1-156 3-3-164 FERGUSON, TH | 15.60 | SOVEREIGN FARA 9 14" colour overwind THORN 1690/1691 EHT with rectifier |
| Hinan CT4/5 22.60 | 1790 TX100 110° TX90 | 9.50 P.O.A. | VISUAL DISPLAY UNIVERSE OF THE L.O. for the I.B.M. LCE FB1 ar |
| CVC5 CVC7 CVC8 CVC9 coi. 10.00 CVC20 series colour 9.00 CVC30 CVC32 series colour 8.50 | E. PAPWOF 120 Risegate R Gosberton, Rise | oad, gate, | Digital VT100 £20.00 old Required. We also supply spare: Amstrad, Grundig, Ta Hitachi, Thorn, Triumph, S |
| CVC45 8.50 FT100 FT110 state p/no. 10.00 PHILIPS | Nr. Spalding Lincs PE11 4 | | Scneider, Sony, Toshil Delivery by return of po |



BARCLAYCARD VISA

LONDON **LEICESTER**

TV & VIDEO WHOLESALERS (UK) LTD. **BIGGEST SELECTION - KEENEST PRICES** **BIRMINGHAM** BOLTON

FOR THE BEST DEAL AROUND

ENTIRE RANGE OF EX-RENTAL T.V.S & VIDEOS FROM

— GRANADA

PLUS MANUFACTURERS NEW 'GRADE B' T.V. & VIDEO

Audio — Hi-Fi — Microwave etc — Handsets — Video Heads — Aerials — Set-top — Selfix-R.F. Leads-A.C. Leads

BASIC T.V.s THORN/GRANADA **MIXTURE SPECIAL OFFER**

50 TEXT T.V.s OR REMOTE THORN/GRANADA **SPECIAL OFFER**

50 FULLY SERVICED VHS VIDEOS THORN/GRANADA **SPECIAL OFFER**

F.S.T. NEW/USED 'B' NEW 'B PORTABLES

H/SETS FROM £8

FRESH STOCKS EVERY DAY. WORKING OR OFF THE LORRY.
LOADS AVAILABLE DIRECT FROM SOURCE PHONE NOW FOR DETAILS

DELIVERY SERVICE

C.T.V. LONDON Eley Estate, Noble Rd, **Edmonton N.18** 01-807 4090, 01-884 1314

C.T.V. BOLTON Nile St., Unit 1, Bolton, Lancs. 0204 384 868

C.T.V. LEICESTER St. Georges Mill. Humberstone Rd, LE1 0533 515299

Head Office C.T.V. BIRMINGHAM 369 Stratford Rd, Sparkhill B11 021 772 1591

NEW PRODUCT ANNOUNCEMENT introducing the UNIVERSAL





ELECTRON VIDEO REPAIR CASSETTE

A great time saving device for the bench or field service engineer for hands free video inspection or repairs. Simply insert the cassette and experience its many advantages to aid fault diagnosis.

No need to remove the tape carriage for routine servicing

Nn more taping of sensors and transmitters during servicing

No need for manual operation system switches etc. during servicing or repair

Supplied with cleaning buds and fluid To obtain your cassette please send cheque or p.o. to:

EXPORT ENQUIRIES WELCOME

ELECTRON T.V. & AUDIO

46 Eastern Avenue Swindon. Wilts. Tel. 0793-39363

HOW

Long it can take to locate faults on VHS Video Recorders. HOW

HOW HOW

Can I avoid tying up all these vital hours? Costly it can be to buy individual manuals for different models.

HOW

Exhausting it is when days pass and the same video is still on the bench, problem unsolved. When you find a fault after hours and hours of

HOW

searching, you realise it was a very simple

HOW

Can I take more work on and gain greater profits in less time? I wish someone would make up a manual with hundreds of 'stock' and more difficult faults to save me the headaches.

HOW

HOW ABOUT THIS THEN

Technical Advisory Systems have collated and indexed hundreds of 'stock' and the more difficult faults, along with symptoms/data on many popular models including:

FERGUSON - PHILIPS - JVC -PYE — PANASONIC — HITACHI — AKAI — MITSUBISHI — SHARP — SANYO — FIDELITY -ETC, ETC, ETC,

You will wonder HOW you managed without this powerful aid, containing SYMPTOMS/DIOGNOSTICS/FAULTS/

PROCEDURES/MODIFICATIONS
All well PROVEN as a great TIME SAVER and ESSENTIAL for all service depts, and personnel, quick and easy reference and easily updated on our monthly subsciption system.

ALL THIS STILL ONLY £73.00 (inclusive)

NEW updating book version

ONLY £35

Regular monthly up-dates still only £30, per year, payment with order only to:

TECHNICAL ADVISORY SYSTEMS 33 FOXCOTE, ASTLEY VILLAGE, CHORLEY, LANCASHIRE PR7 1XE.

Telephone: (02572) 75667



QUALITY USED T.V. & VIDEO

COMPLETE RANGE OF T.V's AND VIDEOS **MOST MAKES AND MODELS AVAILABLE**

STOCK ARRIVING DAILY **T.V's from £3.00** Videos from £30.00

Free Delivery Service to most areas of the U.K.

UNIT 80. BARRACKS ROAD. SANDY LANE INDUSTRIAL ESTATE, STOURPORT-ON-SEVERN. **WORCESTERSHIRE DY13 90B**

> Just 10 Mins from M5 Junct. 6 Worc's North

02993-79642 or

Classified Advertisements

01-261-5942

No other consumer magazine in the country can reach so effectively those readers who are wholly engaged in the television and affiliated electronic industries. They have a need to know of your products and services.

The prepaid rate for semi display setting £9.00 per single column centimetre (minimum 2.5 cms). Classified advertisements 60p per word (minimum £10),

SETS & COMPONENTS

OCHRE MILL TECHNICAL SERVICES are now on 0666 (Malmesbury) 823228. Grundig TV spares, all models to 1983. Fast, friendly, helpful service, sensible prices. Gt Lype Farm, Charlton, Nr Malmesbury, Wilts SN16 9DR

PANASONIC TV's + VIDEO's

Good range of late models - well worth a visit

> Superb and working Many other models/makes More profit, less headaches Regular supply

Repo TV Daisy Works
345 Stockport Road,
Longsight, Manchester.
(A6 between M/c and Stockport) Mr Poole or Mr Ricketts Tel. 061-273-2854/274-3409

WIZARD DISTRIBUTORS **MANCHESTER** TV & VIDEO SPARES

We stock spares for PHILIPS, PYE, RANK, GEC, SHARP, SONY, HITACHI, SCHNEIDER, HINARI & DECCA

And also THORN & ITT FIDELITY SPARES MAIN DISTRIBUTOR

Did you know we also stock

FUSES TUBES AFRIALS AERIALS AEROSOLS RESISTORS CAPACITORS VALVES HANDSETS VIDEO HEADS

TOOLS VIDEO LEADS AUDIO LEADS SEMICONDUCTORS SERVICE MANUALS TEST EQUIPMENT TV/VIDEO TROLLEYS
TELEPHONE ACCESSORIES

Counter open Monday-Friday 9am-4.45pm Mail Order-Access/Visa

TRADE ONLY EMPRESS STREET WORKS, **EMPRESS STREET** MANCHESTER M16 9EN. Tel: 061-872 5438; 061-848 0060.

HALTON TV TRADE DISPOSAL

WORKING TVs AND UNTESTED Mon-Fri 10-5 SAT 10-1

St Michaels Industrial Estate, Widnes Tel. 051 423 1577

VIDEO

VHS - BETA

PANELS, MOTORS, CABINETS, TUNERS, LOADING MECHANISMS, ETC. SAVE EEEs

PHONE US WE MAY HAVE IT.

HOLME SERVICES LTD

Union Street, Doncaster Tel. 0302 349583 Fax 0302 349510

2 NORTON ROAD, STOURBRIDGE, WEST MIDLANDS TELEPHONE: 0384-390706 / 0836-585829 (24 HR)

LARGE SELECTION THORN ALL AT COMPETITIVE PRICES OPEN: MON-FRI

SAT - 9.30-3.00

384-390706 0836-585829 (24HR

box number £2.00 extra. All prices plus 15% VAT. All cheques, postal orders etc., to be made payable to Television, and crossed "Lloyds Bank PLC". Treasury notes should always be sent registered post. Advertisements, together with remittance, should be sent to the Classified Advertisement Dept., Television Room 204B (H.H.), IPC Magazines Limited, Kings Reach Tower, Stamford Street, London SE1 9LS. (Telephone 01-261 5942).

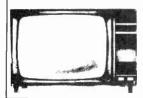


LINCOLNSHIRE **AREA**

FED UP WITH TRAVELLING FAR AND WIDE FOR YOUR EX-RENTAL TV AND VIDEO'S?



THEN WHY NOT TRY US FIRST?



BUDGET TV

Unit 4. **Exchange Road** Lincoln LN6 3JZ Lincoln 500413

SUFFOLK TV & VIDEOS

Large stocks always available

GEC, Fineline KT3, KT30, Hitachi, Nat Pan, working stocks in our showroom from £20,00. Text £85.00 with handset.

0394 670115

Bridge Road, Felixstowe, Suffolk 1P11 7FL

ANY SPARE SENT ANYWHERE

Whether you're professional or dabbler, your mail order answer for that hard to get component AGS THE small order specialist

(0752) 225946.

AGS Electronics, 49 Farringdon Road, Plymouth PL4 9ER

RCS VARIABLE VOLTAGE D.C. BENCH POWER SUPPLY 1 to 24 volts up to 1/2 amp. 1 to 20 volts up to 1 amp. 1 to 16 volts up to 1/2 amps D.C. Fully stabilised. Twin panel meters for instant voltage and current readings. Overload protection.

Fully variable.
Operates from 240V A.C.
Compact Unit: size 9 × 51/2 × 3ins



£39 Incl. + Post £2

RADIO COMPONENT SPECIALISTS

ACCESS 337 WHITEHORSE ROAD, CROYDON SURREY, U.K. Tel: 01-684 1665
List, Large S.A.E. Delivery 7 days Callers Welcome Closed Wednesday

FOR FURTHER **DETAILS CONTACT CLASSIFIED ON** 01-261 5942

ELC EAST LONDON COMPONENTS AUDIO TELEVISION VIDEO COMPONENTS AT VERY KEEN PRICES TEL: 01-472 4871 2SB-556 2SB-557 2SB-560 2SB-562 2SC-2537 2SC-2546 SPECIAL OFFER AN203 AN210 AN214 AN253 AN262 AN272 AN301 AN302 AN303 AN315 AN315 AN316 AN360 AN610 AN610 160p 160p 300p 500p 300p 1999 575p 400p 550p 400p 325p 225p 400p 400p 325p 400p 325p 400p 325p 400p 325p 400p 325p 400p HA13502 HA13702 HA1372 HA1372 HA1374 HA1374 HA1384 HA1388 HA138 HA1388 HA1388 HA1388 HA1388 HA1388 HA1388 HA1388 HA1388 HA1388 H 2SC-1213 2SC-1214 65p 45p 20p TDA2170 TDA8180 TDA2583 TDA2583 TDA3565 TDA3565 TDA3565 TDA3561 TDA3561 TDA3562 TDA3562 TDA3562 TDA3562 TDA362 TDA362 TDA3620 TDA3650 TDA3650 TDA3660 TDA360 TDA360 TDA360 TDA360 TDA360 STR50020 2SC-2550 75p STR58041 40p 2SC-1222 2SC-2555 175a 250p 280p 25p 150p 130p SR2M ICPN10 STK5481 STK7308 STK4141 TDA2005 7805 7812 IDLER VC0005 VC0006 VT11 TYRES 2SB-566 120p 2SC-1226 80p 2SC-2564 28C-1317 28C-1318 28C-1327 28C-1328 28C-1345 28C-1343 28C-1443 28C-1443 28C-1454 28C-1562 28C-1662 28C 2SC-2565 2SC-2575 2SC-2577 2SC-2579 STK433 STK435 STK436 STK437 STK439 STK441 STK443 STK457 STK457 2SB-568 40p 80p 85p 40p 65p 2SB-595 REMOTE CONTROLS FROM £12.99 2SB-596 2SB-647 2SB-648 2SB-649 VIDEO HEADS VIDEO BELT KITS VS-2EG 5EG VS-10 VS-7300 VS-9700 JVC 3HSSV 2SC-2611 2SC-2581 50p 200p £14.95p £24.95p £40.95p £14.95p £20.95p £39.95p £40.95p £35.95p £19.99p £19.99p £19.99p £21.99p JVC 3HSSV JVC 3HSS4VA JVC 3HSS4VA PANASDNIC 3HSSN PANASDNIC 3HSSU1N PANASONIC NV366 PANASONIC NV367 PANASONIC NV777 HITACHI VT8000 9000 HITACHI VT11/23/63 SDNY C5/5/C 80p 95p £1.40p £1.65p 65p 2SB-681 250a 2SC-3078 40p 250p 150p 150p 230p 150p 100p 2SC-3078 2SC-3182 2SC-3284 2SC-3298 2SC-3506 2SC-3519 2SD-1265 2SD-198 2SR-688 AN5151 AN5151 AN5151 AN5151 AN51612 AN5440 AN5440 AN5440 AN5440 AN5710 AN5612 AN5720 AN5720 AN5720 AN5730 AN5730 AN5730 AN5730 AN5730 AN5730 AN5930 AN6248 AN5930 AN6248 AN5930 AN6250 AN6350 AN6350 AN6350 AN6361 AN6361 AN7110 AN7111 AN7140 AN71116 AN71116 AN71116 AN7117 AN7140 AN71116 AN7117 AN7140 AN7141 AN7140 AN71 STK461 STK465 STK06001 STK0080 STK0080 STK2025 STK2025 STK2029 STK2230 STK2240 STK2240 STK2240 STK2240 STK3041 STK3044 STK3042 STK3042 VS-9700 FISHER VBS 7000 VBS-9000 SANYO VTC-5500 VTC 9300 258-705 258-716 258-717 258-717 258-717 258-717 258-717 258-717 258-85 £2.05p 85p 2SC3156 80p 525p 525p 70p 125p 125p 2SD1207 2SD1497-02 TRANSIST 25A-479 25A-479 25A-499 25A-499 25A-496 25A-496 25A-564 25A-564 25A-683 25A-683 25A-726 25A-726 25A-726 25A-733 25A-789 25A-788 25A-789 25A-789 25A-794 25A-789 25A-817 25A-839 25A-817 25A-896 25A-910 25A-921 25A-936 25A-94 25A-104 25A-106 25A-110 25A-1156 25B-545 25B-545 25B-545 ORS SHARP VC-6000 VC-6100 VC-6300 VC 7000 VC-8300 VC-9300 200p 310p £1.60p £1.50p £1.70p £1.50p £1.50p £1.00p 2SD1497-06 2SD-200 VIDEO IDLERS VIDEO IDLERS 3V29 TAKE UP IDLER VT 9300 C2.959 VT 11 14 17 C 00056EZZ C 11.959 VC 00056EZZ C 11.950 NV 2000 C 15.000 NV 330 DILER TYRES FOR MOST MODELS UNIVERSAL LAMPS SHARP LAMP SHARP LAMP UNIVERSAL TRIPLERS PINCH ROLLERS FOR MOST MODELS UNIVERSAL TRIPLERS PINCH ROLLERS FOR MOST MODELS ON OFFE SWITCHES ON OFFE SWITCHES 2.959 2SD-235 40p 80p 160p 40p 75p 45p 50p 40p 40p 90p 80p 180p 100p 20p £1.50 £2.95p £1.95p £1.95p £1.95p £1.50p £1.50p 50p 30p 60p 2SD-235 2SD-288 2SD-299 2SD-313 2SD-315 2SD-325 2SD-352 2SD-357 Z80CPU 6510 6526 906114 901225 901226 901227 F PLUG SONY SL C5 C7 SL 8000 £1.40p £2.50p TOSHIBA 2SD-358 2SD-358 2SD-386 2SD-388 2SD-389 2SD-400 2SD-426 2SD-428 HITACHI MODULE HM6251 500p HITACHI VT-5000 VT-11 **ON/OFF SWITCHES** 74LS SERIES SONY ON/OFF SWITCH C2.25p G11 ON/OFF SWITCH WITH REMOTE C2.00p TX10 ON/OFF SWITCH WITH REMOTE C2.00p JVC HR-3300 HR-3330 HR 3360 HR 4100 HR-6500 HR 7200 HR-7650 HR-7700 74 SERIES £2.00p £2.00p £2.00p £2.00p £2.40p TR441 50p 150p 150p 50p 30p 60p 100p 75p 75p 4000 SERIES IN STOCK **CASSETTE MOTORS** 2SD-428 2SD-438 2SD-468 2SD-476 2SD-478 2SD-525 2SD-526 2SD-600 THYRISTORS 6-9-12-13 2 VOLTS £3.00p CASSETTE HEADS MONO CASSETTE HEAD STERED CASSETTE HEAD TX10 FOCUS UNIT RUBBER BELT ALL SIZE 1 2×1 2 RUBBER BELT ALL SIZE 0 5×3 RUBBER BELT ALL SIZE 0 5×5 85p £1.50p £1.00p TRIACS OP AMPS NATIONAL NV 333 NV-777 NV-2000 NV-7000 NV-8600 £1.40p £1.00p £1.25p £1.00p £2.00p BC107 BC108 BC212L BD137 UPC 158H UPC 1181H UPC 1183H UPC 1185H UPC 1186H UPC 1225H UPC 1263H UPC 1277H UPC 1277H UPC 1278H UPC 1383H UPC 1385H UPC 1385H UPC 1387H UPC 138 90p 40p 100p 45p 125p 125p 230p 2SD-612 2SD-613 2SD-669 2SD-716 2SD-718 2SD 733 BD139 BF422 BF423 BU208A BU208D BU500 BU508A TIP41C TIP42C 2N3055 2N3773 **ELC EAST LONDON COMPONENTS** 25p 25p 75p 95p 95p 25p 25p 25p 115p 110p 65p 125p 350p 63 PLASHET GROVE, EAST HAM, LONDON E6 1AD. TEL: 01-472 4871 CPEN 9AM TO 7PM. MB3714 MB3722 MB3730 MB3731 M51102L M51104L M51516L M51517L STK011 STK014 STK015 STK016 STK020 STK025 two minutes walk from Upton Park Tube Station 2SD-745 2SD-748 250p 150p 50p 450p 95p 475p 275p 260p 100p 320p 50p PLEASE PHONE US IF WHAT YOU NEED IS NOT LISTED AS WE HOLD THOUSANDS OF ITEMS IN STOCK 2SD-748 2SD-761 2SD-8228 2SD-837 2SD-838K 2SD-845 2SD-850 2SD-859 2SD-869 2SD-880 BT119 ADD 70p P/P ADD 15% VAT ALL GOODS DESPATCHED SAME DAY BT151 BR303 PRICE SUBJECT TO CHANGE WITHOUT NOTICE VISA ACCESS ACCEPTED

— PRE-SEAS TESTED UNTESTED FERG TX

all sizes

£30

£20

TOSHIBA all sizes

£30

TESTED UNTESTED £20

VARIOUS COLOUR TELEVISIONS untested £5.00

TELETEXT TELEVISION B/C untested £30.00

> **DIRECT LOADS AVAILABLE**

TESTED ONLY

KT3 all sizes TESTED **UNTESTED** £30 £20

GRUNDIG all sizes

TESTED UNTESTED

£30

£20

VARIOUS COLOUR TELEVISIONS tested **£10.00**

TELETEXT TELEVISION R/C Tested **£50.00**

> **ACCESS & VISA ACCEPTED**

THESE ARE ALL GENUINE PRICES ONE & TWO'S INCLUDED **JUST BRING YOUR** TRADE CARD

EXPORTERS OF

TELEX: 378414 BLBIRD G

FAX: 0602 861027

ALL OUR TELEVISIONS AND VIDEOS ARE IN GOOD ORDER WITH CLEAN CABINETS WITH WORKING REMOTE CONTROL. IF YOU ARE DISSATISFIED YOU MAY RETURN THE GOODS WITHIN SEVEN DAYS.

(10,000 sq. feet Warehouse) Unit 3-3a Meadow Trading Est. Meadow Lane Near Notts County Football Ground In National Tyre Yard. Nottingham NG2 3HQ Telephone:

(0602) 864627

(6,000 sq. feet Warehouse) 2 min from June 34 of the M1 Unit 17. Meadowhall Trading Estate 27 Amos Road Sheffield 4 Telephone:

★ DATA ★ DISTRIBUTION

OPENED IN LEICESTER AREA

We have all makes in stock

(THORN & ALL KINDS JAPANESE EX-RENTAL TV &

VIDEOS)

B-GRADE TV – VIDEOS & AUDIOS HITACHI – TOSHIBA – AKAI – SANYO ETC IN STOCK NOW

MIDSYSTEMS

THITAPES

CARCASSETTES

دي

MALKHANE

► NEW FST's & PORTABLES ◄



★ WE ARE HERE TO PLEASE AND SATISFY YOUR EVERY NEED ★



LEICESTER

DATA DISTRIBUTION No 2 ASCOT ROAD OFF MELTON ROAD LEICESTER Tel No: 0533-663766

BIRMINGHAM

D.S.D. DISTRIBUTION
UNIT 3, ARMOURY ROAD
SMALL HEATH TRADING ESTATE
SPARKHILL, BIRMINGHAM B11 2PP
Tel No: 021-772-2743

REBUILT **TUBES**

DIRECT FROM THE FACTORY WHERE THE BEST COSTS LESS

FINEST QUAL LOWEST PRICES

SPECIAL DISCOUNTS **BULK BUYERS**

2 YEAR GUARANTEE, 4 YEAR OPTIONAL

ALL MAKES INC. SONY

NATIONWIDE DELIVERY

PHONE NOW FOR FREE LISTS SHERWOOD TUBES LTD

60A PEVERIL STREET, NOTTINGHAM NG7 4AH. Tel. 0602 786896

NEWCASTLE upon TYNE

Solid State 2110 GEC Starline **DECCA** 80 or 100 series **FINLANDIA** Basic **FINLANDIA** Remote

PHILIPS PHILIPS KT3 K30 Basic **PHILIPS** K30 Remote **PHILIPS PHILIPS** K30 Text



Frade workers always available Loads direct from source



FERGUSON TX FERGUSON TX9 FERGUSON TX10 DORIC Mkiv DORIC Mkiii

Basic Text Text Text Basic ITT GRUNDIG **FINLANDIA FINLANDIA**

Trimline Basic CVC30 Basic Basic Text



Delivery and



FERGUSON 3V30 **PANASONIC** NV333 HITACHI VT8300



P.V.S.

COLOUR PORTABLES ALWAYS AVAILABLE

3V29

35 Nunsmoor Road, Fenham, Newcastle upon Tyne Phone (091) 272 2303





WORKING C.T.V.

| Philips KT3 & K30 Bush T20 & T26 Grundig 7400 |) £15) Text £56 £15 from £25 |
|---|--|
| | £29 £40 |
| 8800 | 26 |

| 8800 | 26 |
|---------------------|----------------|
| 9000 £1 | 15 |
| 9600 R/C £1 | 15 |
| 9900 R/C£2 | 20 |
| TX9 & TX10 Basic £2 | 27 |
| TX9 & TX10 R/C£3 | 33 |
| TX9 & TX10 Text£5 | |
| Stereo Text£6 | 39 |
| FST Text £9 |) 5 |
| FST Stereo Text £10 |)5 |

WORKING VHS **FERGUSON**

| 3V30 – 8940 3V31 3V32 L/P 3V35 | | | | | | | | | | | | | £7 | 8 5 |
|---|------|------|--|--|--|--|--|--|--|--|--|--|----|--------|
| 3V43 L/P Hi/Fi 3V65 | | | | | | | | | | | | | | |
| PHILIPS | | | | | | | | | | | | | | |

| VR646 | 2 | | | | | | | | | | | | | | | | | . 5 | 27 | 8 |
|-------|----|---|----|---|------|------|--|--|--|--|---|-----|---|--|--|--|------|-----|----|---|
| VR656 | | | | | | | | | | | | | | | | | | | | |
| VR674 | 0 | | | | | | | | | | , | | | | | | | €. | 10 | 0 |
| VR676 | 0 | | | | | | | | | | | . , | × | | | | | €. | 10 | 0 |
| TOS | HI | E | 3, | A | | | | | | | | | | | | | | | | |
| V65 . | | | | | | | | | | | | | | | | | | | £7 | 8 |

We specialise in working and guaranteed Thorn & Co-op stock. No customer too large or small. Our collection days are Wednesday, Thursday & Friday. Call Steve or Keith for stock availability. SPECIAL OFFER, free delivery in Leicestershire, Warwickshire, Cambridgeshire, Lincolnshire, Northamptonshire and London areas.

V75

GRUNDIG VHS

ALL R/C & TEXT SETS SUPPLIED WITH HANDSETS

4 MINS J22 M1 Nationwide Delivery Service Available 11 MARKET STREET, COALVILLE, LEICS. TEL: (0530) 810836 or 810837

ALL PRICES SUBJECT TO **VAT AT 15%**

£100

********** EVISION

K30 KT3 £20 INC £20 INC GEC 26" CHASSIS £20 INC SITT TRIMLINE £20 INC **TOSHIBA** MK 4 DORICS £20 INC ALL TEXT £30 INC £40 INC **PORTABLES** £14 INC PYE G11 BASIC £14 INC TX9s/10s PHILIPS G11 BASIC £12 INC **JAPS** FROM £ 1 1 INC 8

> MK3. GEC T20. ITT. DECCA 80s/100s

£10 INC

PHONE

051-548 4414

UNIT J, ADMIN BUILDINGS. KIRKBY, LIVERPOOL L33 7JX

D.I.Y. SCRATCH REMOVAL + TUBE POLISHING KIT

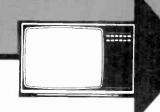


First class results can be obtained every time with this kit. The kit, which comes with full instructions is especially useful on ex-rental work for those sets with excellent cabinets and good but scratched tubes which may be had at very much reduced prices. The kit could pay for itself

SPECIAL PRICE £35.00 INCLUSIVE Electric drill required **PC TV SERVICES**

8 ORCHARD CLOSE ORCHARD CLOSE Tel. 0920 871474 Stanslead Abbotts, Herts SG12 8AH

SONIC TV DISTRIBUTORS



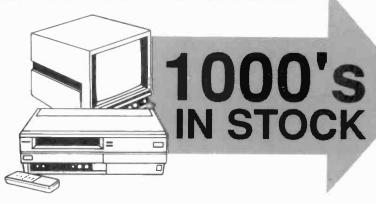
HITACHI

PHILLIPS

SONY

AMSTRAD

SUPERB SELECTION OF TELEVISIONS AND VIDEOS ALL TOP NAMES



Full range of ex-mail order audio equipment including hi-fi's, stereo systems, car radio cassettes, twin deck radio cassettes, and many more - all brand new.

DON'T BE DISSAPOINTED - STOCK UP NOW FOR THE CHRISTMAS RUSH!

VIDEOS FOR SPARES **BIRMINGHAM**

UNIT 4A ABBERLEY STREET SMETHWICK BIRMINGHAM B66 2QU TEL:021 565 1727

FAX:021 555 5367 TELEX NO. 0902 333 199 **PRESTON**

UNIT 34 ROMAN WAY LONG RIDE ROAD PRESTON PR2 5BB TEL:0772 655011

THORN

PANASONIC

JVC

EX-GRANADA



EXPORT ENQUIRIES WELCOME

ALL PRICES ARE SUBJECT TO 15% VAT & BASED ON QUANTITY





BESCO LIMITED T/A

NORTH WEST ELECTRONICS

ENTIRE RANGE OF EX-RENTAL TV'S & VIDEO'S STOCK UP NOW FOR THE XMAS TRADE!

NEW STOCKS EVERY DAY, WORKING OR OFF THE PILE

makes include:- Sharp, Hitachi, Ferguson, Pye, NAT PAN, ITT etc.

Working VHS video from £35.00. Late models always available.

KNOCKOUT PRICES ON COLOUR TV'S

FERGUSON, PYE, HITACHI, PHILIPS, BUSH, ITT, etc. Large selection of oddball TV's only £3.00 each.

TELETEXT BARGAINS FROM £30.00 (G11) WORKING.

FERGUSON TX TELETEXT WITH HANDSET ONLY £55.00. PHILIPS WITH REMOTE ONLY £65.00.

OVER 1000 COLOUR TV AND VIDEOS AVAILABLE

RING OUR HOTLINE NOW FOR PRICES OR CALL IN YOU WILL BE DELIGHTED.

WORKING EX-EQUIPMENT PANELS

| | lF | Con- | De- coder | Line | Power | Frame |
|-----------|----------|--------------------|--------------|--------------|-------|-------|
| | | verger | Louer | scan | | |
| T20/22X | | 5 | 14 | 18 | 17 | 14 |
| T26 X | | 5 | 16 | 20 | 17 | X |
| 718 | 7.50 | 5 | 14 | 20 | 3 | 14.00 |
| Philips G | 11 14.50 | 5 | 12 | 20 | 20 | 11.50 |
| • | | All prices include | Postage & F | Packing, But | + VAT | |

* IF THE PANEL YOU REQUIRE IS NOT LISTED PLEASE ASK *

BRADFORD

SPRINGMILL STREET MANCHESTER ROAD BD5 7RL

RING: TONY OR TERRY (0274) 308186

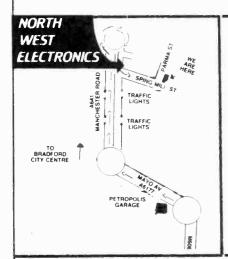
LEICESTER

UNIT B ALBION RD TRADING EST SILEBY (just off A6) RING: ALEX (050) 981 6580

Prices are plus VAT & based on quantity

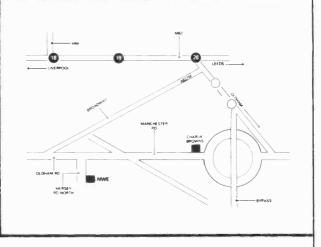
MANCHESTER

UNIT 3 MERSEY RD NORTH IND EST FAILSWORTH RING: DAVID (061) 683 4612



OPEN 6 DAYS

9-5 pm



VISA WELCOME

CHEQUES ACCEPTED WITH BANK CARD

GENERAL FACTORS

Working colour TV's from Basic to Text, all on working display with good Cabinets - Ready for sale or rent.

PYE - PHILIPS G11, KT-3, K-30 - REDIFFUSION Mark 3-4, GRUNDIG, TOSHIBA, ITT, etc.

Direct loads, various sizes, mixed types. You collect. Ask for details.

USED VIDEO

Spares for Video and TV available

Phone for details of current stock, if we don't have it, we can probably get it for you. SPECIAL spares for Philips VHS.

All new stock as used spares prices, phone us.

VIDEOS

VHS Beta 2000 System from £15.00

New B, grade faulty stock VHS VCR's. Ask for details and prices. All prices plus VAT.

Union St., off Sepulchre Gate West. **Doncaster South Yorks DN1 3AE**

10 am-5 pm MON-FRI. Tel 0302-349583 24hr Ansaphone Fax 0302-349510 Mobile 0836-368878

21/2 miles from A1M for M18 - M1

NOTICE TO READERS

Whilst prices of goods shown in classified advertisements are correct at time of closing for press, readers are advised to check with the advertiser both prices and availability of goods before ordering from non-current issues of the magazine.

TYNE & WEAR **TELEVISION** CENTRE

Large selection of Rather special colour TV's & Video's. All at competitive prices. Off the pile or refurbished by own qualified engineers.

Phone: Tyneside 091-4551302 or call at: 68 MORTIMER ROAD, SOUTH SHIELDS, **TYNE & WEAR NE33 4QU.** (Only 2 miles from the Tyne Tunnel)

YOU WON'T REGRET IT!

TRADE ONLY

NOW OPEN IN CORNWALL

DECENT, CLEAN WORKING & NON WORKING THORN TV's & VCR's AT COMPETITIVE TRADE PRICES LARGE WAREHOUSE PREMISES

COWELL TV & VIDEO WHOLESALE

MEVAGISSEY (0726) 842582

ST. AUSTELL (0726) 69384

LINE OUTPUT TRANSFORMERS TRANSFORMERS from 8.39 from 8.39 from 8.39 to 9.45 from 10.49 to 18.90 from 6.30 to 12.60 from 8.39 to 13.65 from 9.45 from 9.45 from 9.45 from 9.45 from 9.45 from 6.30 to 16.80 from 6.30 to 16.80 from 10.49 to 14.69 from 8.39 from 7.35 from 5.25 from 5.25 to 6.30 from 5.25 to 8.39 ASA Autovox B & 0 Blaupunkt ASA Autovox Decca Grundig Decca Grundig ITT Körting Loewe Opta Nordmende ITT Körting Loewe Opta Luxor Nordmende Philips Saba Salora Philips Saba Siemens Telefunken

NO ACCOUNTS/NO CREDIT CARDS POSTAL ORDER/CHEQUE WITH ORDER/ADD 2.50 FOR P&P from 8.39 from 9.45 to 18.90 from 9.45 to 11.55 Siemens Telefunken PLEASE ASK FOR OUR TRADE CATALOGUE

DÖNBERG ELECTRONICS LTD

SCHOOLMASTERS HOUSE, RANAFAST, CO. DONEGAL, EIRE TEL: 075/48275 FAX: 075/48275 EIRE

RELIABLE WHOLESALE

Colour TV's From £3 VHS Videos From £25 Text Set Wkg From £45

LARGE STOCKS ALWAYS AVAILABLE **CALLERS WELCOME**

01-471 9622

Unit 2/2A Lathorn Road. East Ham, London E6

JOMILL ENTERPRISES

Exporters TV's VCR VHF requirements,

LOOK NO FURTHER

Trade Televertas actual size 1" × $2.5'' \times 3''$. 12 volt dc from £11.50

Mains connected televertas £17.50 quantities 5. If not £25.00 each.

SECAM DECODERS £27.50

All prices + VAT. Add £2.00 P&P

Filters for export conversion Export TV's £59 ea.

We are the export specialist. 173 Dalston Lane, Hackney, London É8 Tel: 01-533 2229

WHY NOT FAX YOUR **COPY TO US ON:** 01-261 6704

For All

SHARP GRUNDIG PHILIPS

Fidelity and Thorn

Genuine replacement spare parts you need only one phone call on

0734-876444

061-682-1415

Same day despatch before 2.30 pm. Over 55,000 parts in stock

Willow Vale Electronics Ltd

Sole UK Parts distributor for Grundig and Sharp. Main Philips UK Distributor

FIND FAULTS FAST!

with this efficient battery-powered SIGNAL TRACER. Much quicker to use than a 'scope, especially at millivolt levels! Listen clearly to tape head signals. Trace through tuners, IF's, switching and AF-amps with ease.

Complete and ready to use, with AF and RF probes £37.50 inc carr + £2.35 per battery. VAT extra COLEBOURN ELECTRONICS

20 Folly Lane, St Albans, Herts. AL3 5JT or Tel. 0727 44785 for more details

RING NOW FOR FURTHER **INFORMATION ON SERIES DISCOUNTS AND CURRENT RATES**

MAIL ORDER ADVERTISING

British Code of Advertising Practice

Advertisements in this publication are required to conform to the British Code of Advertising Practice. In respect of mail order advertisements where money is paid in advance, the code requires advertisers to fulfil orders within 28 days, unless a longer delivery period is stated. Where goods are returned undamaged within seven days, the purchaser's money must be refunded. Please retain proof of postage/despatch as this may be needed.

Mail Order Protection Scheme

If you order goods as a private individual from Mail Order advertisements in this magazine and pay by post in advance of delivery, Television will consider you for compensation if the Advertiser should become bankrupt or go into liquidation provided:

- (1) You have not received the goods or had your money returned; and
- (2) You write to the Publisher of Television summarising the situation not earlier than 28 days from the official on sale date of the publication and not later than three months from that date. (Please retain proof of payment)

Please do not wait until the last moment to inform us. When you write, we will tell you how to make your claim and what evidence of payment is required.

We guarantee to meet claims from readers made in accordance with the above procedure as soon as possible after the Advertiser has become subject to bankruptcy proceedings or gone into liquidation up to a limit of £4,050 per annum for any one Advertiser so affected and up to £12,150 per annum in respect of all advertisers.

This guarantee covers only advance payment sent in direct response to an advertisement in this magazine (not, for example, payment made in response to catalogues etc., received as a result of answering such advertisements. All display advertisements are covered but only boxed trader classified advertisements are included. Advertisements as loose inserts are not covered.

AERIALS

DEMODERS

- **★ FULLY AUTO SWITCHING**
- **★ INTEGRAL POWER SUPPLY**
- **★ SUPPLIED WITH CONNECTING LEADS**

(When ordering please state make & model of satellite receiver)

- ★ AMSTRAD SRX100 + SDX60
- ★ AMSTRAD SRX200 + SDX60 ★ AMSTRAD SRX200 + SDX80
- **★ WOLSEY STARLET**
- **★ PACE SS3000 AND MARCONI DISH**

£154.50 or less

£199.00 or less

£229.00

£185.00

£196.00

- **★ CABLES ★ POLE MOUNTS ★ WALL FIX**
- **★ FLOOR MOUNTS ★ CHIMNEY MOUNT**
- **★ BRACKETS ★ NUTS & BOLTS ★ PLUGS ★ CLIPS**



J.W. HARDY 231 Station Road, Stechford, Birmingham B33 8BB 021-784-8478

All prices Quoted are plus VAT Carrier Up to 25kg Carrier Up to 50kg 9.50 P+P for small light parcels 2.50
TRADE ONLY

United Kingdom Blendown Ltd. Bank House, 17 Rhos Rd. Rhos on Sea, Clywd. Wales, Te!: 0492-49246 Fax 0492 47880 ...6.50

New Zealand TDON Ltd 5 Rangipawa Rd, Onehunga, Auckland, Tel: 668-907 Fax 646-216

BMR 44 Regenerating-Automatic-Machine. Please, ask for catalogue Ireland
Dönberg Electronics
Schoolmasters
House, Rannafast,
Co. Donegal
Tel: 075-48275

West-Germany (FRG) Ulrich Müter, 4353 Oer-Erkenschwick, Fax 02368 57017





Europe's most frequently bought

pays itself within 4 weeks; regenerates picture tubes even

90cm dish, adaptor for Marconi Linb L. C. and Ku band Linbs from £
F. connectors — 10 for
N/F and F/N adaptors
20dB line amps
Prices exct. VAT — Send SAE for leaf ANTENNA

KESH ELECTRICS LTD Main St., Kesh, Co. Fermanagh, N.I. Tel: 03656 31449 Tlx: 747412

METERS

METERS. Reconditioned 10p/50p available from stock. Contact THE METER CO. (Poole) LTD.

TEST EQUIPMENT

1987-88

AVAILABLE 1st NOVEMBER

Printed on big A4 keep clean glossy pages which then open up each side to even bigger A3 (no split circuits). Hard back in best quality Library Buckram. Apart from essential circuitry we have included setting up information, fault finding trees, oscilloscope readings and mechanical part numbers.

The book has been produced with the invaluable help of the following manufacturer.

| | | Ċ | OVERS 130 DI | FFERENT MODEL | .S | | |
|-------------------|---|---------------------|---------------------------------------|---------------|---|------------|---|
| AKAI | VS22 VS23 VS25 VS35 | GOODMANS GRANADA | VCR2000 VHSEH2 VHSEH3 VHSES2 | NORDMENDE | V1245 V1305 V1403 V2405 | SAMSUNG | VI626 VB900 VB910 VB910 |
| | VS53 VS55 VS240 VS245 | | VHSEY1 VHSEY2 VHSF63 | | V3005 V3105 V3405 V4405 | SANYO | VRH500 VRH3100 VRH3300 |
| ALBA | VCR4000 VCR5000 VCR6000 | GRUNDIG | VS400 VS440 VS450 | NIKKAI | V5005 NVR100 NVR500 | SENTRA | VX5000 VX8000 VX8400 |
| AMSTRAD | VCR6000 VCR6100 | HITACHI | VT410E VT420E | PANASONIC | NVG25 NVG40 | SHARP | VCT72H VCT781HM |
| DECCA FERGUSON | 8495DK 8951 | | VT430E VT450E | | NVG45 NVG48 | SOLAVOX | NCVR1000 NCVR5000 |
| | 3V64 3V65 FV10B FV11R | J.V.C. | VR3918 VR3919 VR3938 HRD170 | PHILIPS | VR6462 VR6463 VR6467 VR6468 | TASHIKO | VVE922 VVE931 VVE932 VVF933 |
| | FV12L FV13H | J.V.C. | HRD180 HRD210 | | VR6561 VR6760 | | VVF934 |
| FIDELITY | FV14 T VCR100 VCR6000 VCR6100 | | HRD230 HRD370 HRD430 HRD530 | PIONEER | VR6761 VR6843 VR505 VR515 VR707 | TATUNG | TVR6111 VRH8350 VRH8490 VRH8495 VRH8550 |
| FISHER | FVH-P5000 FVH-P5100 | | HRD565 HRD755 | PROLINE | 5000 7000 | TELEFUNKEN | VR2920 VR2925 |
| FINLUX | VR1010 VR1020 VR1025 VR1030 | MITSUBISHI | HSB10 HSB20 HSB30 | PYE | 9000 9100 DV464 | | VR2930 VR2931 VR2935 |
| | VR2005SW VR2010 VR2020G | N.E.C. | DX1000K N9053 N9055 | | DV468 DV562 DV761 | | VR2941 VR2971 VR2935 |
| | VR2020W VR2025G | NORDMENDE | N9210 V1001 | QUESTAR | 100 200 | | VR2945 VR2975 |
| GOLDSTAR | VR2025W VR2040 GHV12401 GHV1244I | | V1005 V1015 V1025 V1035 | SALORA | SV6700 SV8700 SV8710 SV8800 | TOSHIBA | V77B V80B V81B V83B |
| | GHV1246I GHV1248I VCP4130I | | V1041 V1205 V1235 | SAMSUNG | VI611 VI616 VI621 | | V85B V90B V93B |

VIDEO SERVICING 1987-88 £65.00 ISBN 0 951 3897 34 Covering 130 video recorders Television Servicing 1987-88 £55.00

ISBN 0 951 3897 0X Covers 389 TV models

SEND FOR COLOUR **LEAFLET**

Libraries and County Councils only supplied on invoice. 28 days net

987-88 TELEVISION SERVICING - STOCKS ARE GETTING LOW. ORDER NOW!

Insured delivery plus post & packing £4.00 for 1 or 2 books. Over 2 books £2.50 each 1985-86 TV Servicing £25.00

29 WARMSWORTH ROAD, DONCASTER, YORKSHIRE DN4 ORP

TEL: 0302 855017

WORLD **SATELLITE** ANNUAL by Mark Long £31.

This comprehensive manual is the Official Supplement of the World Satellite Almanac The book contains detailed descriptions of next-generation systems like EUTELSAT II, INTELSAT VI AND VII, TELECOM II, and EUROSAT.

The annual also provides informative updates on ASTRA, TDFI and EUTELSAT I Other recent developments, including the flat dish, are also described.



SATELLITE AND CABLE SCRAMBLING AND DESCRAMBLING. Basic theory. 2nd Ed. 280p

VIDEO SCRAMBLING & DESCRAMBLING, Advanced theory and circuits. 246 pages by Graf & Sheets

EUROPEAN SCRAMBLING SYSTEMS. Circuits, Tactics & Techniques, by J. McCormac, fascinating information for the service engineer.....£29

HIDDEN SIGNALS ON SATELLITE TV. Teletext. telephone channels, teletype...

SATELLITE, OFF-AIR & SMATV. By F. Baylin ...

WORLD SATELLITE ALMANAC. All footprints, 650 pages, second edition by M. Long£32

SATELLITE TV INSTALLATION GUIDE. 2nd edition by John Breeds The No. 1 Best Seller. £12

Pay by Cheque **ACCĖSS VISA**



£19

Price includes P&P UK. Airmail Europe £3.00. Outside Europe £6.00 extra per item.

SWIFT TELEVISION PUBLICATIONS

17 Pittsfield, Cricklade, Swindon, Wilts SN6 6AN. Tel: 0793 750620

WANTED

WANTED EX-RENTAL T.V.s and Videos, any quantity, quick collection. Cash paid. 0742 312832.

SURPLUS/REDUNDANT ELECTRONIC **COMPONENTS WANTED**

I/Cs - Tuners - Transistors - Valves -Diodes etc, any quantity considered immediate payment.

ADM Electronic Supplies

Tel. 0827 873311.

Fax 0827 874835

WANTED - used BK Precision, CRT Analyser Tester or similar, must be in good working order. Tel. 0831

TV's AND VIDEO'S WANTED CASH WAITING

Best Prices, we collect. Fast reliable, confidential service, any quantity large or small.

Tel: 0860 737050 or 0582 32005

NO COLOUR DEAD SET TRIPPING If you keep back issues of *Television* then read on. Fast Fix is a complete card filing system, listing the symptoms of television faults published in *Television Magazine* under *TV Fault Fiding* and *Service Bureau* from 1981-1988 inclusive. Over 500 cards thousands of faults are collated and indexed under Taults published in Television mayacon.

Taults published in Television mayacon.

Taults published in Television mayacon.

Taults published in Television mayacon.

Taults published in Television mayacon.

Taults are collated and indexed under manufacturers name and then chassis/model. An example is a Philips K30 with a blank raster, look on p744/Aug '88. For all the properties of the pro those faults you know you have read about but cannot reraember where, Fast Fix is a must.

Ready boxed, quick to use and easily updatable. Fast Fix could pay for itself with just one successful repair. Price £35.00 Send cheque/P.O. payable to: A. G. Humphreys, 13 Mansfield Avenue, St John's Park, Hawarden, Clwyd Tel: 0244 532961 EATS LINE OUTPUT TRANSISTORS FRAME COLLAPSE

SITS VACANT

SKILLED TECHNICIAN WANTED. Good pay rates apply. Jomill Enterprises, 173 Dalston Lane, E8. Tel. 01-533 2229

COURSES

ONE DAY INTENSIVE TRAINING COURSES ON

– SERVICING — VIDEO

ABSOLUTE MUST FOR ALL COLLEGE STUDENTS, APPRENTICES AND AMATEURS.

MODERN FAULT FINDING METHODS TO SERVICE TV's THE QUICK AND EFFICIENT WAY. CERTIFICATE GIVEN UPON COMPLETION OF COURSE.

RING NOW FOR PLACES ON 0525 851385

ACCESS VISA

MASTERCARD TECHNICAL INFO SERVICES (T)

76 Church St., Larkhall, Lanarkshire ML9 1HE Phone 0698 884585 Mon-Fri 9-5, 0698 883334 any other time FOR FAST QUOTES IMMEDIATE DESPATCH of all Phone Orders by ACCESS, VISA, etc. or to Listed Customers

WORLD'S LARGEST COLLECTION OF SERVICE MANUALS . . . from £3.50 to £50 . . . Most unobtainable elsewhere Every issued FULL SIZE SERVICE SHEET in stock: CTV's or Combinations £3.50/Singles £2.50; Plus LSAE

LSAE for any Quotation, plus FREE large Catalogue, STREE Review, Pricelists, etc.

Most original Video Service Manuals from J.V.C. or Siemens at £15 each Servicing Colour TV; 2nd edition by Gordon J King for £14.95; only available from TIS(T)

| A small selection from titles in stock . | many | only obtainable from TIS via mailorder POST FRE | E: |
|---|---------|---|------------|
| Practical TV Repairs by Tunbridge | £12.95 | Newnes Guide to TV & Video Technology | £9.95 |
| Mobile Radio Servicing Handbook | £25.00 | IEE Wiring Regs Explained & Illustrated | £7.95 |
| Practical Radio, Repair & Service Course | £11.95 | Servicing Personal Computers by Tooley | £20.00 |
| Video Recorders, Servicing by Beeching | £20.00 | Spectrum Repair & Service Guide | 25.00 |
| Oscilloscopes, How to Use/How they Work | €6.95 | Servicing Radio, HiFi, TV Eqpt by King | £10.95 |
| Giant Binders of TV & Video Circuits eac | h 29.50 | Video Techniques 2nd ed by G White | £30.00 |
| Computer Engineers Pocketbook | £9.95 | Refrigeration & Air Conditioning | £7.95 |
| 1987 Brit CTV Repair Manual by Tunbridge | £9.95 | Domestic Eqpt Repair & Service | £16.95 |
| Principles of Compact Disc | £2.95 | VHS Common Faults | £3.50 |
| The PAL System from Thorn Research | €6.50 | Practical Transistor (Clearance offer) | £1.95 |
| Audio & HiFi Engineers Pocketbook | £9.95 | TV & Video Engineers Pocketbook | £9.95 |
| Questions & Answers on Radio Repair | £4.95 | Audio Equipment Tests by King | £12.95 |
| | £12.00 | | from £7.50 |
| Integrated Circuits Technical Data Manuals from | £5 to £ | 9.50 each, full list on application | |

| 12 Big Colour TV Repair Manuals covering the British & many Foreign from 1970 to 1988 | 299.00 |
|--|---------|
| 25 Fault Finding Booklets covering most Videos from 1979 to 1986 to match circs below | £59.00 |
| The Set of Thorn's own 10 Video Circuit Description Manuals from 3V00 to 3V43 | £49.50 |
| 10 Giant Binders containing Circuits & Layouts for Brit & Foreign CTV from 1974-1989 | £265.00 |
| 5 Giant Binders containing Circuits & Layouts for most Videos from 1979 to 1988 | £139.00 |
| SPECIAL OFFER: All 25 Video Fault Guides and the 5 matching Circuit Collections for only | £169.00 |
| Send now for | |

Full details of our Famous Complete Integrated Servicing & Repair Systems for TVs and Videos

These systems contain all the circuits & data needed to cover repairs and servicing for anyone in business or wishing to start up their own business. All the Diagrams, Repair, Service & Technical Data needed. At a fraction of the normal cost of Terms are also available

The Circuit/Layout Set for almost any Video . . . £7 each, CTVs . For £3 . . . Comprehensive Service Manuals & Sheets Catalogues PLUS 1989 Chassis Guide & £4 Vouchers

ERVICE MANUA

Available for Colour Televisions, Mono Televisions, Video Recorders, Audio equipment, Music Systems, Car Radio's, Cameras, Test equipment etc etc.

Over 100,000 stocked, originals and photostats. LSAE Enquiries with Make/Model wanted.

FREE catalogue Unique Repair and Data Guides for LSAE.

MAURITRON (TV)

8 Cherry Tree Road, Chinnor, Oxfordshire, OX9 4QY. Telephone: (0844) 51694 anytime.

TELEVISION CLASSIFIED ADVERTISEMENT

LINEAGE 60P PER WORD (MINIMUM INSERTION £10). 5% DISCOUNT 6 INSERTIONS.

| | R S.C. CM. 6 INSERTIONS, ALL PRICES PLUS 15%. B | £8.10 PER S.C. CM. 12 IN | SERTIONS. |
|---------|---|---|-----------------------------|
| | | | |
| | | | |
| | | | |
| ADDRESS | | | |
| | | | |
| | TELACE SESTI WIT AGO | | TARCLAYCARD VICE |
| SEND 1 | FOR TO: CLASSIFIED ADVERTIS LTD., KING'S REACH TOW I in England, Registered No | SEMENT, TELEVISION RO ER, STAMFORD STREET, | OM 2331, LONDON SE1 9LS. |
| | Stamford Street. | London SE1 9LS. | 11/89 |

GERMAN SERVICE SHEET SPECIALISTS

Our connections are world-wide. We furnish any kind of German, European and Japanese service sheet or manual. Thousands of different sheets and manuals in stock. For any enquiries:

> **DÖNBERG ELECTRONICS** Schoolmasters House, Rannafast Co. Donegal, Republic of Ireland. Phone: 075 48275

SERVICE MANUALS

VCR - CTV - MTV - AUDIO - MICROWAVE

Most makes and models - UK, Japanese, Korean, German, USA etc. types available. For list with money-saving vouchers send £2.50 or 'phone for quote.

DATA-GO 112 AMEYSFORD RD., FERNDOWN, DORSET BH22 9QE. Tel: 0202 894207 10 am-1 pm, 2pm-4.30 pm Mon to Fri

MISCELLANEOUS

OUANTITY SURPLUS TV/RADIO Valves new boxed ready-vision. Phone Prestatyn (07456) 3340.

DIGIMETER 732 Automatic Multimeter & 125MHz Frequency Counter

4 DIGIT AUTORANGE MULTIMETER

TOUCH AND HOLD FACILITY BUILT-IN, SIMPLY SELECT (DCV)
RELATIVE MEASURING (DCV)
PEAK MIN/MAX RECORDING
INDESTRUCTBLE ACAINIST ANY VOLTAGE IN COLOUR
TELEVISIONS UP TO 50 000 VOLT!!!

7 DIGIT 125MHz FREQUENCY COUNTER WITH 2 GATE TIMES - WIDEBAND PRE-AMPLIFIER 5Hz . . . 125MHz

SENSITIVITY 25mV (1M OHM)



.50 000 Volt leave me cold" BRIGHT 7 DIGIT VACUUM FLUORESCENT DISPLAY (GREEN)
HEIGHT 13mm DIMENSIONS W 274, D 172, H 64 WEIGHT 2.7KG ACCESSORIES HT PROBE 30kV

> made in Germany 2 years guarantee price IR£499

sole agency for the Republic of Ireland, N.-Ireland & U.K.

DONBERG-ELECTRONICS LTD. DÖNBERG-ELECTRONICS - SCHOOLMASTERS HOUSE RANAFAST - CO. DONEGAL - EIRE - TEL. 075-48275 - FAX 075-48275

The Theory and Practice of PAL Colour Television in three important Video Cassette Programmes

Part 1.

The Colour Signal Part 2.

The Receiver Decoder Part 3.

Receiver Installation



VHS ★ ★ **V2000** ★ ★ BETAMAX ★ ★ UMATIC



For full details telephone

0253 725499 (Day) 0253 712769 (Night)

Or send for precise details

FLINTDOWN CHANNEL 5 339 CLIFTON DRIVE SOUTH, LYTHAM ST ANNES FY8 1LP (enclosing this advert)

| NAME | |
|------|------|
| | |
| | TEL: |

INDEX TO ADVERTISERS

| APTERMICE | |
|--|----------|
| | 30 27 |
| AGS Electronics. 7 Apollo 7 | 77 71 |
| Audio Visual Services | 9 |
| | 0 |
| Bi-Tel | |
| Bolton Metropolitan College 6 Budget TV 7 | 7 |
| Bull, J & N Electrical 1 Business Credit Limited 7. | |
| Campion Wholesale Ltd. 7 Carter, John (Electrical) Ltd. 7 | |
| Central TV & Video Wholesalers Ltd. 7: | 5 |
| Chromavision | |
| Clearvision 6 Colebourn Electronics 8 | 4 |
| Cowell TV & Video Wholesale | 2 |
| Crewe Wholesale T. V 55 C.T. V 7 | 2 |
| Data Distribution | |
| Donberg Electronics | |
| East Cornwall Components 17 East London Components 77 | 7 |
| Economic Devices 44, 4 Electron TV & Audio 7 Electrosmart 8 | 5 |
| Express TV Supplies | 3 |
| Flintdown Channel 5 86 Gamma U.K. Ltd 70 | |
| General Factors 83 | 3 |
| G.G.L. Components Grandata Ltd 2, 3, 4 Griftronic Emission Ltd 57 | 4 |
| Halton TV Trade | |
| Highgrade Components Ltd. 59 | 9 |
| Highsurge 66 Holmes Services Ltd 76 Humphreys, A.G. 85 | 5 |
| Hussain Central TV 69 Ibex Of Scotland 66 | |
| ICS 7 Inwin Electronics 61 | 1 |
| J.J. Components 78 | |
| Jomill Enterprises 83 Kesh Electrics 84 | |
| LRC (Spares) 68 LWL 87 | |
| Manor Supplies | 7 |
| Mappin Electronics Cover II Marstall Ltd. 73 Mauritron TV 86 | 3 |
| Midland TV's80 |) |
| NGK Electronics 56 N.G.T. Electronics Ltd. 74 North West Electronics 82 | 1 |
| Omega Electronics. 71 | |
| Papworth, E. 74 PC TV Services 80 | } |
| PCTV Services 80 Phoenix TV Wholesale 68 Powelf, T 73 P.V.S. 80 | |
| P.V. Tubes 6 | 6 |
| Radio and TV Components Actor Ltd. 54 Radio Component Specialist 77 Relay Draph Ltd. 72 | 7 |
| Relay Dmagh Ltd. 72 Repo TV 76 Riscomp Ltd 21 | ; |
| Semple Service 66 | j |
| Sherwood Tubes Ltd 80 Sonic TV Distributors 81 | } |
| Southbridge TV Centre 71 South London Television Ltd 63 | 3 |
| Southside IV 74 Stewart of Reading 70 Suffolk TV 8 Video 77 | i |
| Suffoik 7V & Video 77 Supertronics 56 Supervision 75 Swift Television Publications 85 | |
| Swift Television Publications 85 Technical Advisory Systems 75 | |
| Technical Advisory Systems | |
| Teletraders | |
| Elemina Information Services 86 Teleprice L. S Teletraders 72 Televideo Services 64 Teltech 66 T. E. S. D. Ltd 63 Tidman Maii Order Ltd 60 Todd, John, Television & Video Wholesalers 58 Tiree W. Trader TV 55 | |
| | |
| Tyne & Wear TV Centre | |
| U-View85 | |
| View-Tel | |
| View-Tel 68 Visions London 50 | |
| West Midlands TV & Video 10 | |
| | |

WELL KNOWN MANUFACTURERS B GRADES

COLOUR TV'S

portable, remote, FST etc also ex-rental.

VIDEOS

L/play remote, programmable remotes also ex-rental.

AUDIO

midis, CD and portable.

REGULAR DELIVERIES TO THE SOUTH WEST, SOUTH AND MID WALES

Small parcels of quality TV, Video, Audio and Small Appliances ideal for profit.





| Micro Switches mixed CV 861 | 7 10 p | Т 6052 | 40p | Varta Batteries 2.4V | NI.CD 5 Hou | ırs Rattery | Regulated Power Supply | |
|--|--|---|----------------|--|-------------------------------------|---------------------------------|--|---|
| 15 for £2 Y 716 | 10p | T 6054 | 40n | 100M/A 50p | Charger with bat | | 3-12 volts I amp in box with switch and | |
| Hill Intercom £8 Y 730 Philips small stereo Y 827: | 30p 10p 6A/IKV 20n | | 50p £1.00 | TV Battery 50p 1.2V NC. 2.4V NC each | Hill Deluxe Ur Cad Charger | | mains lead £4 | |
| headphones £2.50 Y 860 Y 933 | 30p 5p | T 9004 T 9005 | 40p 40p | 4 amp-1.2V Nickel Cadmium Battery D | Nickel Cadmiu | £6 | Philips' Video Cleaning Case SBC461 | £6 |
| Rank UHF 4 push Y 969 button tuner £4 Y 997 | 50p 30p volt Relays 75p | | £1.00 10p | Cell £1.00 | Charger AA-C-I | | Philips' Headphones Compact Disc Stereo Type | £10 |
| GRC power supply Min 12 R 1038 | 40p | ZTX 108c | 10p | 3.25V Battery 50p 12V Video Battery Packs | 12 Volt Aerial C | | ETT Display Tube 58705 | 50p |
| Rank front panel R 1039 Z950 £5 R 20100 | 40in | ZTX 109k ZTX 213 | 5p 5p | 4Amp U2 Cells £10 24V 4Amp (100VA) | Relays 144 Mc/s | | 8 Seg Display FND500 | 20p |
| R 2029 | 50p | ZTX 341 ZTX 342 | 10p 10p | Trans £4.00 | 6 Push Button U 2100 Series Repl | acement for | Model 3000 Pocket Personal D.M.M Volts range AC DC 200M/ | 1. (A/ 10 |
| GEC IF tuner panel R 2210 PC786B £12.50 R 2257 | 60p 60p 50p | ZTX 384 | 10p | Mains 240V (100VA) to 240V out fully shrouded | Touch Button U | | Volts range AC, DC 200M/ 400V Res 3000Km | £20 |
| Rank 1F 742 £3 R 2265 R 2305 | 50p 50p | ZTX 451 ZTX 550 | 10p 10p | £5.00 ITT CVC45 8 way resistor | 8 SEG LED D driver 1.C. LN | isplay with 41017 50p | Export PYE731 6 Push Button unit with (U | |
| £10 R 2322/ | 30p 2323 nair 80n | MJ 2253 MJE 3040 | 60p 60p | unit for v/cap £3 | PHILII | | VHF) band switch EFT Micro Phone M5 50p | £4 with |
| 6 Button Unit R 2323 R 2396 | 15p 50p | MJE 2209 SP 8385 | 10p 50p | CVC40 8 button unit with mains lead & slider pots | MIN. HEAD £1.50 | PHONES | switch | |
| Rediffusion Mark 3 £5 R 2461 Rediffusion Mark 4 & 7 R 2030 | 80p 50p | SAB 3205 | £1.00 | with sockets £10.00 Book on An Introduction | Electronic | | 11/2 Volt Sub Min Relays Philips Solar Scientific | 25p |
| Push Button unit £10 R 2443: R 2540 R 2737 | =BD124 30p £2 | | £1.00 £1.80 | to Satellite TV | 6 volt, 12 v | | SBC1730 Calculator £12 | 2 |
| CMP200 R 2738: | =T1P41 40p | 200 + 100 + 100 + 50 300V 150 + 200 + 250M 300V | | £5.95 No VAT Book TV DX Handbook | 15V, 015V, 1A Print Type Tran | £1 | 15v-0-15v 1 Amp Transformers £1 | |
| R 3129: | =T1P41c 40 p =T1P47 40 p | Computer Transformer | Jop | by R. Bunney £5.95 No VAT | 12v DC Relay | | RGP30K RGP30G | 10p 8p |
| UK IF Tuner £8 \$ 2008b | | 20v/2.25A; 20v/1.5A; | | Electronics Hobbyists | print type 10 | amp D.P. | RGP10B RGP15 | 5p 10p |
| 4 types of front panels 2SD898 2SC194: Fidelity 2000/3000 Hitachi | 2 £1 | 17/.5A; 19/.5A; 28/.05A PHILIPS METERS | £3 | Handbook £4,95 No VAT | Changeover | £1 | RGP15G T6024WGI GP10 | 10p 8p 5p 10p 6p 10p 5p |
| types £5 STR454 | sets etc. | 4T5003-SBC 851 Analogue | 22.00 | Philips Digital Multimeter with | h memory and au | to ranging | GPI5Q | 5p |
| CVC20, CVC32 1.F. STR602 S 2000A | AF line o.p. £1 | Multimeter £2 | 22.00 | 5BC812 PHILIPS | | £63.00 | DUBLE 7 SEG Displays | 30p 15p |
| CVC40 Cans £5 2SC940 CMR800/3 NEW £20 BU 405 | £1 Л)4 80 р | 20AX MkI Power Supply | | 25 Watt Solder Iron | Various Task on | £4.00 | LNS 26RA or 10 fo | /or £1 |
| CMR800/3 £20 BU 108 | 50p | PC818 Voltage Regulators | £10 | Self adjusting cutter stripper | Various Tools an | u Accessories | | £5.00 |
| CMR803/2 £20 BU 126 BU 180 | 80p 65p | +5V/UA78PO5SC | 30p | 10 mixed tube bars 5000 Diodes-Resistors | | | £3 į | £4.00 pack |
| GEC switch mode BU 204 | 60p 75p | -8V/79M08c +6V/78M06c | 30p 30p | T/V V/Aerial 300Ω or 75Ω * D/P push mains switch | | | £ | £1.50 each |
| trans 20AX BU 207 | £Ì £ì | +10v/78LA10 LM 317T | 20p 30p | Mains lead & two pin socket T/V loop aerial | for radio cassette | | - | 35p 75p |
| CVC33 print type 60p BU 208 | 80p A 75p | LM 337 | 30p | Radio Telescopic Aerial Philips Neon Lamps for TV s | eets | | £ | £1.00 |
| ITT 2,800 mains BU 208 remote switch 50m BU 222 | : 90p : £1 | LM 342/18 LM 340T 5.0 | 30p 50p | Freeze Philips Foam Cleaner Philips | A. 13 | | | 5p £1.20 £1.20 |
| NEW BU 326 BU 407 | 60p | +12V/LM 340T12 +18V/MC78M18 | 50p 20p | Contact Cleaner Philips | | | £ | £1.20 |
| 2110 GEC Sound O/P BU 426 | V 60mj | +24V/78M24 | 30p | Cans of Anti Static, Degrease Lorlin Full Remote Relay Sw | itch fit most T/V | sets, mains 4 | All at £ tag, 2 tag 12 volt £ | 00.13 |
| Panel £1 BU 500 2110 GEC L.O.P.T. BU 500 | D fl | MC 7724cp MC 7824 | 40p 40p | Mains timer. 13 amp — up to Screen locking agent, large ca Red E.H.T. LEAD and Ano | o 2 hours: easy to an | use, plugs ir | nto socket £ | £3.00 £1.50 |
| Panel £6 BU 508 | A 90p V £1 | TIS 90 TIS 92 | 10p | Red E.H.T. LEAD and And Weller solder iron 25 watt | de Cap | | | £1.00 £4.00 |
| 2110 GEC Power Panel £5 BU 705 BU 806 | A £1 | TIS 93 | 20p 20p | Hitachi Silver Oxide Battery 100 Coax Plugs | G13 UCC357 IEC | SR44 1.5V | | 60p 12.00 |
| Line o/p frame panels GEC 20AX £10.00 BU 824 | . 50m | U 19885 | 40p | De-solder pump + 2 nozzles Flat Red LED and Green | Philips | | | £4.00 5p |
| ITT CVC40 Push BUT13 | 6(Y)V-28A £1 | U 3832 U 3845 | 15p 15p | 500gm 60/40 solder ree! | | | | £6 |
| Button Unit & Mains Switch £12 BUW 8 | ⊬ 60 p | MR 508 MR 501 | 10p 10p | Solder 1 kilo reel Dual v/u meter -20 ~ +10db | | | | £5.50 £1 |
| Tuner & IF Panel. Complete 6 button and | 5 10 0 | MR 502 BCW 71R | 10p 30p | K30 thermistor 232266298009 De-solder Pump | | | | 75p £2.50 |
| preset IF with s/wave BUX84 | 50p | BYF 1202 | 10p | Portasol Flameless Gas Solde Green & Red, LED pack mix | | | £1 100 for £ | 16.00 £1.00 |
| Mullard M342 5"×61/2" BUX85 BUY49 TIC 100 | 50p 20p | BYF 1204 BYF 3126 | 10p 40p | Hill Meter Leads, S/Rubber a | and Probes | | £ | £4.00 |
| TIC 110 | 5m 30p | BYF 3214 BYX 10 | 40p 10p | Miniature Linesman Pliers | HILL £2.2 | | re Pliers £ | £2.20 |
| BA 301 £1 TIC 120 | 5N 30 p | BYX 36/600 | 35p | Miniature Side Cutters | | Miniature Er | Cutters £ | £2.20 |
| TA 4127 £1 T1C 22: HD 3884 2A23 £3 T1C 22: TA 4184 £1 T1C 22: TA 2125 £1 T1C 23: | 5S 30p 5E 30p | BYX 38/300 BYX49/600R | 25p 75p | KT3 PANELS Sound Output RGB Output | Chroma | | PHILIPS VHS VCR | |
| HD 3884 2A23 £3 TIC 226 TA 4184 £1 TIC 226 TA 2125 £1 TIC 236 TA 4190 £1 TAG 2 | 5m 30p 5m 30p 26/600 30 p | BYX 55/350 BYX 55/600 (Bead) | 10p 10p | Panel, I.F. Panel and Line C | SC £7.00 each | VR646/ or gear box | VR676() and derived type £1 | es 19.50 |
| | 06D | BYX 71/350 BYX 71/600 | 20p 50p | DVE 4 Kan Suitel & David | 27.00 Cacil | | Mixed Packs | |
| TA 4196 £1 (T092 c TA 4174 £1 T1P 29 TA 4139 £1 T1P 30 | 25p | BYX 72/300 | 20p | PYE 6 Key Switch & Panel G11 Front Panel | £10 | | ower Trans RCA 16182 N | |
| TA 4198 £1 TIP 30/ TA 4167 £1 TIP 30/ | A 25p | BYX 36/600 BYV 95B | 50р 10р | SONY 1400KV Chroma Pane | | Kits | | £1.00 |
| TA 4138 £1 TICV 1 TA 4196 £1 (T092 c TA 4174 £1 TTP 29 TA 4139 £1 TTP 30 TA 4198 £1 TTP 30 TA 4199 £1 TTP 30 TA 4199 £1 TTP 30 BA 546 £1 TTP 31 BA 328 £1 TTP 32 TA 4176 £1 TTP 33 | 25p | BVY 95C BYV 96D | 12p 10p | SONY 1400KV Touch button | unit £3.50 | 10A | £ | £1.50 £1.50 |
| BA 328 TA 4176 £1 TIP 32 | 25p | BYZ 106 | 10p | GEC Decoder Panel PC772A PC446A | | 25 LED rec 201/C Holde | | £1.50 £1.20 |
| TA 4145 TA 4191 £1 TIP 330 TA 4191 £1 TIP 344 | 70p | BPW 41 BYW 56 2A/1000v G11 | 15p 8p | 12 Volt Mains Trans 500M/A | | 20 Large Ll 20 Small LE | ED Red £ | £1.00 £1.00 |
| HA 11710 £1 TIP 341 | 3 60p | BYW 29/50 BYW 95C | 15p 10p | | | | | £1.00 |
| TA 4197 £1 TIP 350 | 50p 70n | BZU 15/24 BZY 93c75 | 54p 50p | NEW TX9 CHASSIS New Ty | ype Thorn £15.00 | Red & Gree | en LED on Panel 1p | each |
| TA 4197 TA 4183 £1 TIP 351 TA 4183 £1 TIP 36 | O 80p | BZV 15/18 | 30p | | | Miyad 100 | Transistor B.F. and B.C. | |
| TA 4183 £1 TIP 36 TA 4195 £1 TIP 360 TA 4175 £1 TIP 41 | 70p | BZV 15/30 BZW 70c6v2 | 30p 10p | Quantity Reduction BY204/4 | 25 for £1.00 | PET 100 | £1.50 1000 for £1 | |
| 1 TA 4177 £1 11P 411 | 3 40p 70n | BZX 79.3v | 10p | BY206 KT3 touch button black | 25 for £1.00 6 for £1 | 12 Volt 4 A | ump Video Battery Pack 1 | 10 of |
| TA 4146 £1 TIP 42 | BRC 6109 10p | Bush thyristor RCA 76122 Transformer 240v/20v-500M | | G11 touch button red K30 full remote Dawer Ass | 6 for £1 | Type D Ce | | £8.50 |
| TA 7699P £3 TIP 48 TIP 49 | 40p 30p | Chassis type Transformer 240v/12 Volts 500m/a | 75p | I.C. K30 VHF. UHF Dawer Ass | £7.00 £6.00 | 40 glass ree | d switch | £1 |
| The Service Engineers TIP 57 Guide to Teletex £2 TIP 110 | 30p 20p | CVC 20 tube base Tube Base Rank & G11 | £2 | BY298 3 amp/fast/R BU126 | 20 for £1.50 10 for £6.00 | 40 Pots | make switch | 70p £1.50 |
| 4 Tunar Fadility front TIP 100 | 30p 2 30p | Infra red led | ~1.20 | BU205 | 10 for £8.00 | mixed | | £2.00 |
| panels with i.c. & pats TIP 11 | 50p 50p | LD57CA 15K-20 turn pots | 15p 20p | BU105 BF458 | 10 for £6.00 10 for £1.00 | 1,000 Diode Bandolier | es, Condensers, Resistors | on £1.00 |
| BB 103 10n TIP 127 | 35p 40p | Thorn 3500 2A cut out | 20р 50р | OA90 | 20 for £1.40 40 for £1.00 | 20mm Fuse Chassis Mo | Holders | or £1 |
| BB 105B×12 £1 TIP 130 | 40p 30p | BRIDGES | | 50 Ceramic Condensers Mixed Mounting Kit for Pow | £1.50 | EHT Diode | | or £1 |
| BB 105G×12 £1 TTP 13: BB 121a 10p TTP 13: 47 10p each TTP 140 | 6p 30p | KBL 005 KBL 02 | 30p 30p | Transistors 300 Condensers | 50p £1.50 | 300 Mixed | Diodes | £2 |
| 47 10p each TIP 140 | 50p 2 80p | KBP 04 | 30p | 300 Resistors 150 Electrolytics | £1.50 £2.00 | | | |
| DG3P EOV-BY228 10 TIP 29 | 50p 55 35p | W02 W004 | 15p 15p | 15 Bulbs Philips | 40p | | ap Pots ITT-GEC-Hitachi- | |
| for £1 TIP L7 | 61A-1000V/4Amp 75p 30p | W005 800V Bridges 2½ Amp | 20p 30p □ | GEC-Hitachi Thick Film Fra | me £5 | Philips etc, ITT Mains | | or £1 |
| T 6032 | | | 1 | | | CMC113 | | £I |
| 2 amp bridge rec. wire end 15p T 6032 T 6036 T 6040 | 40p 40p | MAINS | | CENIDA C. | | | | |
| 2 amp bridge rec. wire T 6032 T 6036 | ase 2A/4(0V) 10p 25p 25p 25p 36 25p 370p 36 50p 370p 36 60p 370p 36 60p 370p 36 60p 370p 370p 38 40p 38 50p | MAINS MICRO SWITCH GEC & Double etc. | £i | SENDZ CONTO ORDER SEE BA | | 12v DC rel | ay 1½×1½×2 print type | 10 £1 |

| SEND7 | COMPONENTS | Thorn TX90 Chassis with Line t | mearity V | Width P.C.B. PCT183 | €20.00 | Philips I Lindset I C £ SAA 3010P MA B8461/WO63 | £3.00 £3 £3 |
|--|--|--|-------------------------|---|-------------------|--|-------------------------|
| TO ORDER S | EE BACK PAGE | S4471 2SD1878 TD 48443/C3 | £1.00 £1.00 | 560M 400V 420M 400V | £50p £1.00 | MAB 8420P-C031 € | €3.00 |
| | K35 Decoder £8.00 | TD A844.9C3 TD A3506 SAA5241 P/A | £1.00 £1.00 £5.00 | 470M 380V 220/400V | £1.00 £1.00 | MAB 8440P-D070 £ MAB 8440P-D033 £ | £3.00 £3.00 £3.00 |
| LA11440 E | 1 K35 Sound OP £4.00 Thick Film Daughter K43 3122-127-43891 £3 | SAA7020 /01 HD614080SA90 | £3.00 £4.00 | 1200PF 15KV 01 2KV | 10p 10p | | £3.00 £3.00 |
| TAA7750 50 HA 411485 £ | p 12 C H K30 Fex Rec Front Panel with 1 1 C £5 | | | 150m-385v 1000m-160v TX90 | 50p £1.00 | | £2.00 |
| UPC1373 50 M58657P € | 1 | 225m ± .25m 380v 220m 385v | £1.00 £1.00 | 1+1 MFD Mams Filter IT 1/100 × 10 | 1 3 Pm 15p 30p | Hand Sets Fidelity £15,00 to £35,00 | |
| M491BB1 | I K4 Focus Pot 21.00 | 240m 400v G11 470m 250v | £1.00 £2.00 | 22/100 4.7M/100 6800pt-1000k | 10p 5p | ECL 8 and 6 Push Button 6 | £1,00 |
| | Fidelity Lube Base with transitor & focus | 400m 400s 175m/100m/100m 350v | £1.00 | 470/100 4700/100 | 20p 75p | Pye 731 LOPTS 6 | £6.00 £6.00 £5.00 |
| Receiver TX100 Panel LC No. SAB3035 —MAB8440P D066 | Bush Tube Base on panel £1.00 | TX9 500m + 500m 175v | £1.00 | 47/160 300/300V to 1.6KV | 10p 80p | CMC 301 front panel € | £5.00 |
| —SAA1060 —PCF8571P | TXIII Tube Base on Panel £3.00 | C7 Hand Set | €6.00 | 800/160 .1/250 Pulse | 50p- 5p | CMC 302 Panel with TC mans switch | £5.00 |
| New Model Philips Meter £25.0 | | G8 LOPI Panel G8 Funer Unit + Panel | €7.00 | 2.2 250v 7N5 1500V | 10p 15p | | £5.00 £8.00 |
| | 1 \ 100 1 b | G84F & Chroma | £4.00 £6.00 | 3n3/250 A.C 33/250V | 10p | GH | £1.5 |
| C Cam Decoder with TDA3591 E Toshiba VHF/UHF FG522F E | · | G8 Chroma | £3.00 | 39/250V | 20p 15p | 3.1.C. Power Supply G11 Full Remote | |
| Mitsumi MECI-F51 € | | G11 Chroma Panel G11 LOPT Panel | £4.00 £6.00 | 4n7/250 tested 5KV 22/250 | 25p 15p | Receiver Panel £ | £3,00 |
| Thorn Spares | 6 Diode Tripler, Mullard 75p Line O.P. Trans. Mono T.X. 12"-14" Philips G8 | G11 IF Panel | £5.00 | 47 250 100/250 | 10p 20p | | ie 23.00 17.00 |
| New 9000 Decoder £8.5 9000 Frame panel £ 9000 Cyclops panel £1.5 | 8 27482 £10 4822 £10 | G11 IF Detector G11 Selector gain module | £3.00 £3 | GFC600/250 700/250 | 60p £1 | Meters Hills 420 Hills HD5000 Digital Meter 1000V Do | 10 14 |
| 8800 convergence panel £8500 convergence panel £ | 6 10273 150rn 1690 OPT \$7,50 | Pyc G11 Front panel with transdu pots, tuner pots, 6 pb switch+lea | icer. | 2 200PE-2Kv 300±300 MFD 350v | 10p £1.00 | | £2: |
| 4000 Power supply £ 1600 Mains lead, switch | G8 Trans, Philips £7.00 | Pyc 6 button switch portable GEC V/cap VHF/UHF tuner and | €1.00 | 800/250 32/300 | 40p 20p | H1500 Multimeter & H1500 Multimeter & | E7.7: E9.00 |
| 1605 IVNPN 1066 80√6A — 10 9000 Sound output panel — € | P CVC820 Split Diode HT | sound O/P PC 706B3 (Export) GEC Line O/P PC 659B3 | £12.00 £6.00 | 4/350 8/350 | 5p 8p | HD1000 Digital | 15.00 20.00 25.00 |
| 3500 Focus unit £1.5 3500 Mains Trans £ | Lead £1.50 GFC 2040 £3.00 | 2110 GEC Power Panel CVC 20 Front panel with sliders | £8.(N) | 4.7M/350k 33/350 | 10p 20p | 8 (1) 5 5 (H) E24 | 25.04 29.04 32.04 |
| 3500 cut outs 10 for € 3500 HF panel € 3500 Frame panel € | 2.1 Mullard AT 2036 £1.50 | mains input panel | €4 | 220/350 300/350 | 30p 40p | HD8000 Digital HD9500 Digital with capacity Temp | 17.1H |
| 3500 Frame panel £. 3500 A.1 Diode 20: 4000 Tube base £ | Pve mono £3.00 | CVC 40 PUSH BUTTON ASSY | | 400/350 22/375 | 50p | Trans Volts Ohms and Amps ranges Infra Red | £64 |
| 3500 A1 pots 50 Beam limiter panel £1.5 | Split Diode Trans £7.00 | Sliders: complete with lamp assy - 8 button units | £9,00 | 220/385 (LITT) | 15p 75p | Hanset Fester Works at 24 feet - Sound repeater | |
| 3500 Power panel with Y969 € 3 Way regulated adaptor 240V 6V/ | [Rank LOP LZ970 £3.00 CVC800 Lme Trans £6.00 | Universal Focus Fits Pye, Thorn Decca Units 1147 Rank tube base on panel | | 330/385 CVC 820HT 0 1/400 | 60p 15p | Works off 9 volt battery Brits in top pocket | 68.D |
| 7 5/9V/300mA £3.50 Rank Toshiba prch unit 0354 £9.50 | CVC825 Split Diode £10,00 CVC 45 £5,00 | Z718 Focus Unit 120 Focus Unit | £1.00 £1.50 | KT3 E/W .39/400 56K 400v | 15p 20p | | 4.50 |
| 4 Push button unit preh £1.00 6 Push button VHF/UHF for | 1 112 Colo Desta Les L 122 | Large Type Decca Small | £1.00 5 | 4700pt/400 22/400 | 10p 10p | Repaired Handsets Philips K4-K35, RC5350-RC5300, RC5370, RC5375, repaired same day | |
| v/cap. GEC-Decca type £7.00 7 Push button for CVC5 ITT £8.00 | 3500 LOPT, & HITrans each £2,00 LOPT Rank Z763 £5,00 | KT3 Focus Unit K30 Focus Pot | 75p 75p 75p | 8/400 33/400 | 15p 20p | RC4001 Full Remote KT3 K30 Telete | 10.00 281 |
| KT3 12 Push button unit £2.00 KT3 (Export) 12 P.B.u £ | K35 Spin Diode 3122/13835930 £10.00 | K30 Tube base on panel TX10 Focus Units | £1.00 £8.50 | 400/400 394K/400V | 40p 20p | | 5.00 6.00 |
| 5 Push button Unit Thorn 5 Push button GRC £6.00 5 Push button PYE 731 £6.00 | with small focus not. Green type \$7.00 | CVC 32 Focus Unit Fidelity Focus Unit 14R-14S | 75p 30p | 1000m-160s 220/450 | £1.00 40p | GFC Full Remote Infra-red, 1983 mod | del |
| Hearing and unit £3.00 Rank Z718 4 P/B/Unit MFCH £4.00 | Black Frinters | 3500 Thorn Focus Umt 11'1 Small for use with Split | £1.00 | 47/500 0 1/600 | 25p | TOSHIBA HAND SETS | 5.08 |
| 7 Button Unit GEC with Lamps £7.00 697 Push Button Unit £6.00 | S.I.C. Universal Tripler £6.00 | Z718 Bush Focus Diode | £2.00 50p | 0.1/1200V wire end | 15p 20p | (°F9176 €7 | 7.00 7.00 7.00 |
| Z916B panel £5.00 T513AP panel £5.00 | D H FGA 62.00 D HFI CVC 5-8-9 63.50 | Remo TV12SP 1600 Thorn FHT Rec and Lead | 50p 50p | 0.1/450 A/C wire end 22/1000 | 20p 20p | | .7.00 |
| Video Tuner | Rank T251.F Triplet £2.00 Rank HTCP A823 £3.50 | IV14 IV20 | 50p £1.00 | 047/600 0,047 [000 | 15p 10p | TOSHIBA HAND SETS | |
| V.6100/05 T'V and Tel/Text unit and hand set £90.00 | 1U 25 30K Rank £3.00 11 IT Z Rank £3.00 G9 Philips £4.00 | TV45 | 50p | 0,01/1000 0:11/1600s | 10p | | 5.00 6.00 |
| Send for data. | GLC 2110 £4,00 3500 Thorn £3,00 | 1X98 Button Unit | £6.00 | 150m/385v 47/1000v | €1.00 65p | VCR Front Display Panel £7 | 7.00 |
| TT14 GEC TEX-DECODER 13 IC Panel with cable form £9,50 | 8500 Thorn £4,00 9000 Thorn £7,00 | TX90 8 Button Unit | £6,00 | 47/250V-A-C 001K-1250 | 10p 10p | Large type ITT TV and V C R Handset £15 | 5.00 |
| PHILIPS | 9500 Thorn £4.50 9600 Thorn £4.00 2040 GEC £3.50 | TX90-TX925 8 Button | | 0.0047/1500 005/1500 | 10p 10p | GI-C Ultrasonic 8CH Full Remote £10 | |
| K40 Text Panel £8,00 | GEC TVM25 Tripler £2.00 Universal Tripler £5.00 | | | 0105-1500 1n8/1500 | 10p 15p | G11 Ultrasome Leletext Handset £20 | 2.00 0.00 |
| KT3-K30 OL-425 | G8 Impler £5,00 CVC20-32 £5,00 | TX100 8 Button Unit | £6.00 | 2n2/1500 01/1600 | 15p 15p | 8 C.H. Ultrasonic GFC Full Remote C2014H/C2219H 615 New Replacement for GH Ultrasonic Full Remote £12 | 5.fH |
| OF-550 E W 10p OF-513 correction 10p | Grundig TVK 52 £2.50 | TX10 8 Button Unit | £10.00 | G11 8200/2KV 0 1/2KV | 15p 20p | Thorn 4000 insert with 7 buttons 65 | 5.00 |
| DF-557 501 | HTBQ Pye 731 £3.00 HTHY £4.00 D22 for Pye 18" colour portable £4.00 £4.00 | EX10/TX100-16 Button | £10.00 | 3n9/2KV 0.0015/2KV | 15p 10p | Decca RC 12 £14 GH Intrased full teletext £20 | 4.00 4.00 0.00 |
| DIODES BY 126 10g BY 127 10g | TP 1193/63 £4,00 BG 100/41 £3,25 | UHF-VHC BAND S.W | | 6n2/2KV 2n2/2KV | 15p 15p | E19 | 9.00 8.00 |
| 3Y 133 10p 3Y 134 10p | BG2087 | G11 drawer ASS 3 pots Mains sw and lead | tch €2.00 | 470pt 4KV 7500pt/2KV | 10p 10p | Philips tull remote KT3, 16C928/20C93 7228/7324, K12 26C 797/4ST 66K | 11. |
| BY 176 BY 179 40p | 12-14V 20 for £5.00 200 for £25.00 | | | 3000PF/3000V 4n7/2KV | 10p | 1826 £12 G11, bull remote top button assy £12 G11, bull remote repair service (exchai | 2.00 |
| 3Y 184 25p 3Y 187 10p | EC's + pots £4,00 G11 F.W. Transformer 500 | K30 Drawer Ass with pots cable forme | €1.00 | 6n2/2K V 7n1/1500V | 15p 10p 10p | unit) £18 GEC intra red full remote 8 channel | 8.00 |
| 3Y 190 40p 3Y 196 30p 3Y 198 100 | GTE Transient Suppressors 245\ 20p | LX10 Drawer with 8 way pots, as | £2.50 | 8n2/1500V 9n1/2000V | 10p 10n | Philips intra red full remote 9 channel 60 CP2605 #6 | 4.00 for 6.00 |
| 3Y 198 Top 3Y 204/4 8p 3Y 206 - BY 407 Lay 8p | G11 100K tuner pots 12 for £1 K13 II: panel £6 (0) | | | 8n2/2KV 0.0082/2500 | 15p | Philips intra-red full remote 12 channel | 2.00 |
| 3Y 208/800 8p 3Y 210/400 5p | K13 line OSC transformer £1 K13/K30 mfra-red receiver | TX10 Ex. port with band switch (drawer) | €2.50 | 150/3500 1800/4KX | 10p 5p | K13 K30 F/Lext £12 K13/K30 Full remote £15 | 2.50 5.00 |
| 35°210/800 10n | head £1 K30 drawer unit with IC's | Hills Meter for the ear man, volts, | amp. | 4.7nf/5KV 170/8KV | 10p 10p | K 13 Power supply £4 | $\frac{4.00}{4.00}$ |
| BY 224/600, 4.8A/600v bridge 50p BY 226 15n | (home) £10 K30 drawer unit with IC's (export) £10 | | £35.00 | 180/8KV 210/8KV | 10p 10p | GLC push pad handset button blobs each | 101 |
| FY 227 ISB FY 228 ISBN 20p lat BY 229 black ISB | KT3 AL Sockets 50p KT3 receiver panel 68 | Hills 9 piece tool kit in case | £5.00 | 1000/10KV 47/100V | 10p 80p | Pye & Philips handset KT3-K30 chassis No RC5150-RC5176-RC5171 RC5177 Special Price £13 | i iv |
| lat BY 229 black | KT3 line driver transformer 50p Pve, K30, GEC, etc. Pre-mains stand-by | Abbey Security Smoke Alarm Mo | del | Fube Thermpath 167 Rank Secam Decoder Pane | | RC4001 K13 and Teletex £14 FLCVC 32 handset renaired £15 | 4.04 5.04 |
| Y 299/60p Tag 30p Y 237 5p | Switch £1 Decca 80/100 II panel £5 NPN PNP 80V 6 Amp FO66 O P | 101 | €5.00 | VHF TH5A 10 of 91 CAP GH | £13.00 £2.00 | CVC 32 Hand Set | |
| Y 254 10p Y 255 30n | Trans pair 25p 5 button touch tuner BBC1/2 11 V1/2 | Philips Coaxial Cable Stripper SB | .:325 | Philips K4 CAP 150M/385V Philips Coaxtal Cable Strip SBC325 | | 1 X9 with Text 1 X9 & T X10 button pint £2 | 2.50 2.00 |
| Y 298 10p Y 299 10p | video with ic SAS 5601/5701 £7,00 Control panel 5 sliders + majins lead£1.50 | £7.50 | | | _ | FIT | 5.50 |
| Y 406 8p Y 527 20p | GH 8 touch button unit replaces old 6 PBU £24 Liber base 4 base unit for \$20 bare. | CVC 20-25-30 Mains Switches Infra Red and Ultrasonic G11 Tel- RANK & LTI Magn. Papaga On | etext Dec | oder Panel £30 | 2 | T.V.& Video Processor (200 Type: £10 PHILIPS | |
| Y 407a 10°p Y 448 10°p Y 527 10°p | Lube base + base unit for 820 Furo chassis £4.00 GFC Line O/P Trans & Rec Stick for | RANK & ITT Mains Remote On- RANK & ITT Remote Switch 280 G11 Mains Switch | On Swite Johin | £1.50 | ב ו | UNIVERSAL HAND SET 612,00 RC: KT3 - K45 | .5 |
| Y 602 YV 26C 10p | CVC 20/25/30.35/dtt/decoder panel \$10 | 4 amp Mains Switch Olz C Mains Switch 4 amp | | 50p 25p 30p | - | We have all parts for Philips Handset | 15 |
| 247 10p P20G 5p | CVC 20/25/30/35/40 decoder panel tuntested! £5 | KT3 Mains Switch 4 amp G8 Mains Switch | | .50p £[,00 | | RC 5353 £15 RC 5300 £12 | 2.00 |
| KP80G (TX10) 30p K-3102 50p | CVC 40/45 IF panel £5 40K Transducer 50p PHILIPS NESTIN £1.20 | GU Preh Red LFD P Button for RANK TOSHIBA Transductors 1 | CH Cha PC-2011 | 50n | N | Philips RC5 £15 TEXT-LYPF | 00 |
| A V 28/200 20p ridge TX10 800/3 arms 30n | PHILIPS NE511N £1.20 LM337M Reg 30p 20 GFC Black Spark Gaps £1.00 | Mains Switch ITT Long Type Prin Mains Switch Philip Long Type Ta | t AG | 75p 75p | | Philips K13-K30 K4 etc £12. | 2.30 |
| BPC35-02 Bridge £1.50 ridge Rec D35B10 40p | K13 Front Panel Control Assy £2.50 | Mains Switch GLC Long Type TA 2000 Chassis Fidelity Mains Switch | .G .(4.1AG | 75p | J I | THORN HAND SETS 9000 9600 TX9 TX10 TX100 | |
| nternational Rectifier FHT Diodes G | B (W 30/50 50p | 250V/4A White Lorlin Mains Switch KT3-K30-K35 Full Remote Mains | :h | 60n | 7 | PHILIPS £10. |),00 |
| A/600V Stud Diodes 20p | 770/HV34.6KV 3 for 8p B TW-92/800R £3 25A473 PNP C'P 10p | Philips Battery Tester All Types at | SONIC | £12 | | RC 5171 £12 | 1.00 |
| M/1000V Stud Diodes 20p | | Philips K4 Mains Switch with stand | | *** | | K35-K4 HAND SET | |

| Tuner Units | T.V. Tubes | Con. Con. | 10 | SN (9/80) | Sop IDA_S77/A C2.00 C1.00 TDA_S77/A C2.00 C1.00 TDA_S77/A C2.00 C1.00 TDA_S77/A C2.00 C1.00 TDA_S79/A C2.00 C1.00 TDA_S91 C1.00 C0.00 C1.00 TDA_S91 C1.00 C0.00 C1.00 TDA_S91 C1.00 C0.00 TDA_S91 C1.00 C1.50 TDA_S91 C1.00 C5.75 C1.50 IDA_S61/A C1.00 IDA_S91 C1.00 C1.50 IDA_S61/A C1.00 C1.50 IDA_S61/A C1.00 C1.50 IDA_S61/A C1.00 C1.50 IDA_S61/A C1.00 IDA_S93 C1.00 C1.00 IDA_S93 |
|---|--|---|---|-----------------------------|---|
| 2SC1725 20p BC328 2SC1740 20p BC328 338 2SC1756 50p BC337 | Pair 15p BD517 30p BD518 30p BD534 30p BD534 30p BD538 30p BD538 30p BD538 30p | PTHBG ISPM OS Deganing Philip type VATHA ITTP 26842 PTHTEL AOR PTYP Engbye A PTA Deganing Thermistor (ItIs most sets POS 98012 | 35p 6MHz SEE 15p 6-5MHz 15p SED460B | 12p M50430-8505P 1D6350P | £1.00 MN1250BB £1.00 £1.00 M50441-5505P £1.00 |