# Components

## Series 400 & 500

421/521 Stereo Amplifier

423/523 AM-FM Tuner

424/524 FM Tuner

425/525 FM Stereo Tuner amplifier

426/526 AM-FM Stereo Tuner amplifier

M4/M8 Stereo Radio Decoder

### TRANSISTORS

| Circuit Ref. | Type | Typical voltages —volts (Positive earth) Collector | Base | Emitter |
|---|---|---|---|---|
| TR1 | AF106 | 12 | 1·7 | 1·4 |
| TR2 | AF115 | 12 | 2·4 | 2·2 |
| TR3 | AF116 | 9·8 | 3 | 2·8 |
| TR4 | AF116 | 9·8 | 3 | 2·8 |
| TR5 | AF116 | 9·8 | 3 | 2·8 |
| *TR6 | AC139 | 2·3 | 0·02 | 0 |
| TR7 | AF116 | 7·2 | 2·3 | 2·1 |
| TR8 | AC128 | 7 | 1·4 | 1·3 |
| TR9 | AC128 | 3·5 | 0·6 | 0·5 |
| TR10 | AC128 | 7 | 0·02 | 0 |
| TR11 | AF116 | 6 | 1·3 | 1·1 |
| TR12 | AF116 | 6 | 1·3 | 1·1 |
| †TR13 | BC109 or ME4102 | 0·02 | 11 | 12 |
| TR14 | BSV44A | 50 | 0·02 | 0 |
| TR14A | AC128 | 12 | 0·02 | 0 M4 only |
| TR14B | BSV44A | 50 | 0·02 | 0 M8 only |
| TR15 | AF116 | 5 | 1·8 | 1·5 |
| TR16 | AF117 | 9·7 | 1·5 | 1·3 |
| TR17 | AF116 | 8·3 | 2·2 | 2 |
| TR18 | AF116 | 10 | 1·6 | 1·4 |
| TR19 | BC109 or ME4102 | 5 | 14·3 | 14·5 |
| TR20 | AC19' 5 | 21 | 8 | 7·5 |
| TR21 | AC191 5 | 17 | 8·2 | 8 |
| TR22 | XK1112 | 8·5 | 0·52 | 0·12 |
| TR22A | AC191 7 | 8·5 | 0·52 | 0·12 A14 only |
| TR22B | XK1112 | 8·5 | 0·52 | 0·12 A15 only |
| TR23 | AC139H | 32 | 8·5 | 8 |
| TR24 | AC139Z | 60 | 25·7 | 25·5 |
| TR25 | AL102 | 60 | 25·5 | 25 |
| TR26 | AC139Z | 25 | 0·4 | 0·27 |
| TR27 | AL102 | 25 | 0·27 | 0·02 |
| TR28 | AC139H | 51 | 12·2 | 12 |
| TR29 | AL102 | 70 | 50·5 | 50 |
| TR30 | AC139H | 70 | 51 | 50·6 |
| TR31 | ME4102 | 2·7 | 5·3 | 5·5 |
| TR32 | AC134–AC1914 | 7·5 | 2·7 | 2·6 |
| TR33 | BSV44A | 32 | 8·5 | 8 |
| TR34 | BSV44A | 60 | 25·7 | 25·5 |
| TR36 | BSV44A | 25 | 0·4 | 0·27 |

* Quieting control anticlockwise.
† Stereo indicator may light when measuring base volts.

Notes:

1 Voltages must be measured under no signal conditions with volume control at minimum.
2 *Readings of base voltages may be affected by the meter used.*
3 These typical readings assume that the HT is correctly set at 50 volts ± 1 volt.
4 Transistors TR19 to TR27 inclusive are duplicated in *each channel.*
5 All transistors shown above, except BC 109, are specially selected types and should be obtained from Armstrong Audio Ltd.
When ordering selected transistors please quote circuit *reference.*

## COILS AND TRANSFORMERS

| Part number | Circuit ref. | DC resistance ohms | |
|---|---|---|---|
| RFC1 | L1 | ·75 | |
| RFC2 | L2 | ·75 | |
| FTA4 | L3 | ·2 | |
| | L4 | ·1 | |
| RFC3 | L5 | — | |
| FRO1 | L6 | — | |
| FRO1 | L7 | — | |
| FRO1 | L8 | — | |
| RFC2 | L9 | — | |
| IFT24 | L10 | 1·3 | |
| | L11 | ·3 | |
| IFT20 | L12 | ·3 | |
| | L13 | ·3 | |
| IFT20 | L14 | ·3 | |
| | L15 | ·3 | |
| IFT20 | L16 | ·3 | |
| | L17 | ·3 | |
| | L18 | ·5 | |
| RDT3 | L19 | — | |
| | L20 | ·55 | |
| ED1 | L22 | 90 | (tapped at 3·2 ohms) |
| ED1 | L23 | 90 | (tapped at 3·2 ohms) |
| ED2 | L24 | 23 | (tapped at 2·5 ohms) |
| | L25 | ·9 | (centre tapped) |
| IFR | L26 | — | |
| MLA* | L27 | 3·5 | |
| | L28 | 33 | |
| | L28a | 1·8 | |
| MLR* | L29 | 2·6 | |
| | L30 | 3·7 | |
| | L31 | 34 | |
| | L32 | 1·4 | |
| ML01 | L33 | 2·3 | |
| | L34 | 6·4 | |
| | L35 | 0·5 | |
| | L36 | 10·5 | |
| IFT21 | L37 | 4·5 | |
| | L38 | 4·5 | |
| IFT21 | L39 | 4·5 | |
| | L40 | 4·5 | |
| IFT22 | L41 | 6·4 | |
| | L42 | * | |

* 100 ohms, positive of meter to earth 100K, negative of meter to earth (D7 is frside can).

| Part number | Circuit ref. | DC resistance ohms | |
|---|---|---|---|
| MAINS TRANS-FORMER | L43 | 1·6 | |
| | L44 | 11 | |
| | L45 | 11 | |
| | L46 | 0·6 | (centre tapped) |
| | L47 | 60 | |
| | L48 | 60 | |

## DIODES

D1–D7 inclusive OA79 or AA119
D8 Zener Diode LMX12A or IN4164
D9–D13 inclusive DD003 or PL4003
D14 Zener diode LMZX12A or IN4164
D15 and 16 DD003 or PL4003

## POTENTIOMETERS

VR1 50K LIN (FM quieting)
VH2 1K pre-set (adjust meter)
VR3 100K–100K LIN (bass)
VR4 100K–100K LIN (treble)
VR5 20K 95%–20K 5% (balance)
VR6 100K–100K S/LOG (volume)
VR7 8·2K pre-set
VR8 1K pre-set (adjust HT volts)
VR9 1K LIN pre-set (output level)

## FUSES

F1 1A (20 mm×5 mm)
F2 1A (20 mm×5 mm)
F3 400 mA anti-surge (20 mm×5 mm)
(800 mA for 105–125V AC input)
F4 100 mA anti-surge (20 mm×5 mm)

## PILOT LAMPS

(200 mA for 105–125V AC input)

| | *423 & 424* | | | *523 & 524* | | |
|---|---|---|---|---|---|---|
| P1 | 12V 0·1A | MES | | 6·5V 1W | | LES |
| P2 | 12V 0·1A | MES | | 6·5V 1W | | LES |
| P3 | 12V 0·1A | MES | | 12V | 1·5W | LES |
| P4 | 10V 0·05A | MES | | 10V | 0·05A | MES |

| | *425 & 426* | | *525 & 526* | |
|---|---|---|---|---|
| P1 | 0·1A | 12V | 0·1A | 6·5V ) |
| P2 | 0·1A | 12V | 0·1A | 6·5V ) |
| P3 | 0·1A | 12V | 0·1A | 12V |
| P4 | 0·05A | 10V | 0·05A | 50V |

Note:
1 Higher current lamp must not be used for P4.
2 On 523, 524, 525 & 526; P1 & P2 are wired in series.

## RESISTORS & CACACITORS

| Circuit Ref. | Value |
|---|---|
| 1 | 68pf |
| 2 | 68pf |
| 3 | 68pf |
| 4 | 68pf |
| 5 | 0·1mfd |
| 6 | 68K |
| 7 | 0·1mfd |
| 8 | 47pf |
| 9 | 15K |
| 10 | 560 ohm |
| 11 | 20pf |
| 12 | 22·5pf |
| 13 | 22·5pf |
| 14 | 20pf |
| 15 | 0·01mfd |
| 16 | 2·7K |
| 17 | 10K |
| 18 | 20pf |
| 19 | 5pf |
| 20 | 5pf |
| 21 | 22·5pf |
| 22 | 20pf |
| 23 | 100pf |
| 24 | 1·5K |
| 25 | 15pf |
| 26 | 100 ohm |
| 27 | 33K |
| 28 | 0·1mfd |
| 29 | 18K |
| 30 | 1K |
| 31 | 270 ohm |
| 32 | 200pf |
| 33 | 1K |
| 34 | 200pf |
| 35 | 0·01mfd |
| 36 | 0·1mfd |
| 37 | 18K |
| 38 | 0·01mfd |
| 39 | 33K |
| 40 | 1K |
| 41 | 0·01mfd |
| 42 | 270 ohm |
| 43 | 200pf |
| 44 | 100 ohm |
| 45 | 200pf |
| 46 | 33K |
| 47 | 0·1mfd |

| Circuit Ref. | Value |
|---|---|
| 48 | 18K |
| 49 | 0·01mfd |
| 50 | 1K |
| 51 | 0·01mfd |
| 52 | 100 ohm |
| 53 | 200pf |
| 54 | 270 ohm |
| 55 | 200pf |
| 56 | 250pf |
| 57 | 1K |
| 58 | 10K |
| 59 | 68K |
| 60 | 0·1mfd |
| 61 | 10K |
| 62 | 0·01mfd |
| 63 | 2·7K |
| 64 | 0·01mfd |
| 65 | 680 pf |
| 66 | 0·01mfd |
| 67 | 270 ohm |
| 68 | 100 ohm |
| 69 | 50pf |
| 70 | 68pf |
| 71 | 27 ohm |
| 72 | 50pf |
| 73 | 1K |
| 74 | 27K |
| 75 | 27K |
| 76 | 68pf |
| 77 | 2700pf |
| 78 | 4·7K |
| 79 | 0·1mfd |
| 80 | 12K |
| 81 | 10mfd |
| 82 | 12K |
| 83 | 0·1mfd |
| 84 | 100mfd |
| 85 | 2·2K |
| 86 | 27K |
| 87 | 400pf |
| 88 | 30pf |
| 89 | 5mfd |
| 90 | 56K |
| 91 | 18K |
| 92 | 1K |
| 93 | 100mfd |
| 94 | 10K |
| 95 | 450pf |
| 96 | 0·1mfd |
| 97 | 0·047mfd |

| Circuit Ref. | Value |
|---|---|
| 98 | 5·6K |
| 99 | 22K |
| 100 | 27K |
| 101 | 12K |
| 102 | 1K |
| 103 | 0·22mfd |
| 104 | 15K |
| 105 | 0·1mfd |
| 106 | 450pf |
| 107 | 1K |
| 108 | 100mfd |
| 109 | 3·9K |
| 110 | 6·8K |
| 111 | 6·8K |
| 112 | 5·6K |
| 113 | 0·22mfd |
| 114 | 5·6K |
| 115 | 5·6K |
| 116 | 0·22mfd |
| 117 | 5·6K |
| 118 | 6·8K |
| 119 | 560pf |
| 120 | 560pf |
| 121 | 4·7K |
| 122 | 1500pf |
| 123 | 1500pf |
| 124 | 4·7K |
| 125 | 560pf |
| 126 | 6·8K |
| 127 | 560pf |
| 128 | 1000pf |
| 129 | 1000pf |
| 130 | 47 ohms |
| 131 | 5·6K |
| 132 | 0·01mfd |
| 133 | 0·1mfd |
| 134 | 1500pf |
| 135 | 5·6M ohm |
| 136 | 5·6M ohm |
| 137 | 450pf |
| 138 | 15K |
| 139 | 2200pf |
| 140 | 4700pf |
| 141 | 68pf |
| 142 | 320pf |
| 143 | 20pf |
| 144 | 10mfd |
| 145 | 47K |
| 146 | 0·1mfd |
| 147 | 560 ohm |

| Circuit Ref. | Value |
|---|---|
| 148 | 180K |
| 149 | 1K |
| 150 | 0·1mfd |
| 151 | 1K |
| 152 | 68pf |
| 153 | 20pf |
| 154 | 320pf |
| 155 | 100 ohm |
| 156 | 0·1mfd |
| 157 | 10K |
| 158 | 820 ohm |
| 159 | 0·1mfd |
| 160 | 56K |
| 161 | 560 ohm |
| 162 | 390pf |
| 163 | 220pf |
| 164 | 25mfd |
| 165 | 0·1mfd |
| 166 | 47K |
| 167 | 88pf |
| 168 | 20pf |
| 169 | 320pf |
| 170 | 400pf |
| 171 | 400pf |
| 172 | 180K |
| 173 | 33K |
| 174 | 1mfd |
| 175 | 0·1mfd |
| 176 | 27K |
| 177 | 1K |
| 178 | 0·1mfd |
| 179 | 1K |
| 180 | 400pf |
| 181 | 400pf |
| 182 | 68K |
| 183 | 0·1mfd |
| 184 | 15K |
| 185 | 0·1mfd |
| 186 | 1K |
| 187 | 400pf |
| 188 | 270 ohm |
| 189 | 10K |
| 190 | 0·1mfd |
| 191 | 0·001mfd |
| 192 | 10K |
| 193 | 3·9K |
| 194 | 220K |
| 195 | 2·2M ohm |
| 196 | 0·001mfd |
| 197 | 0·01mfd |

| Circuit Ref. | Value |
|---|---|
| 198 | 56K |
| 199 | 150K |
| 200 | 4·7K |
| 201 | 25mfd |
| 202 | 470K |
| 203 | 100 ohm |
| 204 | 100K |
| 205 | 10K |
| 206 | 100mfd |
| 207 | 100K |
| 208 | 27K |
| 209 | 270 ohm |
| 210 | 25mfd |
| 211 | 25mfd |
| 212 | 68K |
| 213 | 6·8K |
| 214 | 18K |
| 215 | 2·7K |
| 216 | 25mfd |
| 217 | 25mfd |
| 218 | 0·22mfd |
| 219 | 10mfd |
| 220 | 270 ohm |
| 221 | 5·6K |
| 222 | 0·015mfd |
| 223 | 12K |
| 224 | 0·0068mfd |
| 225 | 1·5K |
| 226 | 0·0033mfd |
| 227 | 4·7K |
| 228 | 0·047mfd |
| 229 | 0·047mfd |
| 230 | 8·2K |
| 231 | 8·2K |
| 232 | 0·01mfd |
| 233 | 8·2K |
| 234 | 270K |
| 235 | 2200pf |
| 236 | 0·015mfd |
| 237 | 2200pf |
| 238 | 0·02mfd |
| 239 | 4·7K |
| 240 | 5·6K |
| 241 | 3·9K |
| 242 | 25mfd |
| 243 | 25mfd |
| 244 | 68K |
| 245 | 18K |
| 246 | 1M ohm |
| 247 | 3·9K |

| Circuit Ref. | Value |
|---|---|
| 248 | 100mfd |
| 249 | 10mfd |
| 250 | 4·7K |
| 251 | 4·7K |
| 252 | 47K |
| 253 | 0·1mfd |
| 254 | 4·7K |
| 255 | 250pf |
| 256 | 6·8K |
| 257 | 5mfd |
| 258 | 47K |
| 259 | 450pf |
| 260 | 25mfd |
| 261 | 100K |
| 262 | 100K |
| 263 | 68K |
| 264 | 33 ohm |
| 265 | 320mfd |
| 266 | 1·5K |
| 267 | 68pf |
| 268 | 2·7K |
| 269 | 50mfd |
| 270 | 1K |
| 271 | 1K |
| 272 | 390 ohm |
| 273 | 1250mfd |
| 274 | *10mfd |
| 275 | *10mfd |
| 276 | *VA 1098 |
| 277 | *510 ohm |
| 278 | *22K |
| 279 | *510 ohm |
| 280 | *VA 1098 |
| 281 | *22K |

*On some early models the VA 1047 thermistor was used instead of the VA 1098. In these cases 39K resistors were used instead of 22K, 1K instead of 510 ohms and 5mfd capacitor instead of 10mfd.

| Circuit Ref. | Value |
|---|---|
| 282 | 47 ohm |
| 283 | 47 ohm |
| 284 | 0·82 ohm |
| 285 | 0·82 ohm |
| 286 | 1250mfd |
| 287 | 10 ohm |
| 288 | 0·1mfd |
| 289 | 1·5K |
| 290 | 0·0022mfd |
| 291 | 1·2K ohm |
| 292 | 1250mfd |
| 293 | 270 ohm |
| 294 | 1K |
| 295 | 0·1mfd |
| 296 | 3·9K |
| 297 | 220 ohm |
| 298 | 2·7 ohm |
| 299 | 2·7K ohm |
| 300 | 1500mfd |
| 301 | 0·1mfd |
| 302 | 50mfd |
| 303 | 220 ohms |
| 304 | 0·1mfd |
| 305 | 250pf |
| 306 | 0·1mfd |
| 307 | 220pf |

C22 & C27 only:

| | |
|---|---|
| 304 | 47K |
| 305 | 470K |
| 306 | 25mfd |
| 307 | 470K |
| 1256 | 6·8K |
| 1257 | 0·1mfd |
| 1260 | 25mfd |
| 1261 | 33 ohm |
| 1262 | 100K |
| 1263 | 100K |
| 1264 | 22 ohm |
| 1265 | 2200pf |
| 1266 | 8·2K |
| 1267 | 2200pf |
| 1268 | 2·7K |
| 1269 | 50mfd |
| 1270 | 1K |
| 1271 | 1K |
| 1272 | 390 ohm |
| 1274 | 10mfd |
| 1275 | 10mfd |
| 1276 | Cz 10 |
| 1277 | 750 ohm |

| Circuit Ref. | Value |
|---|---|
| 1278 | 18K |
| 1279 | 750 ohm |
| 1280 | Cz 10 |
| 1281 | 18K |
| 1282 | 51 ohm |
| 1283 | 51 ohm |
| 1284 | 0·47 ohm |
| 1285 | 0·47 ohm |
| 1287 | 22 ohm |
| 1288 | 8·2K |
| 1289 | 0·0015 mfd |
| 1290 | 1·5K |