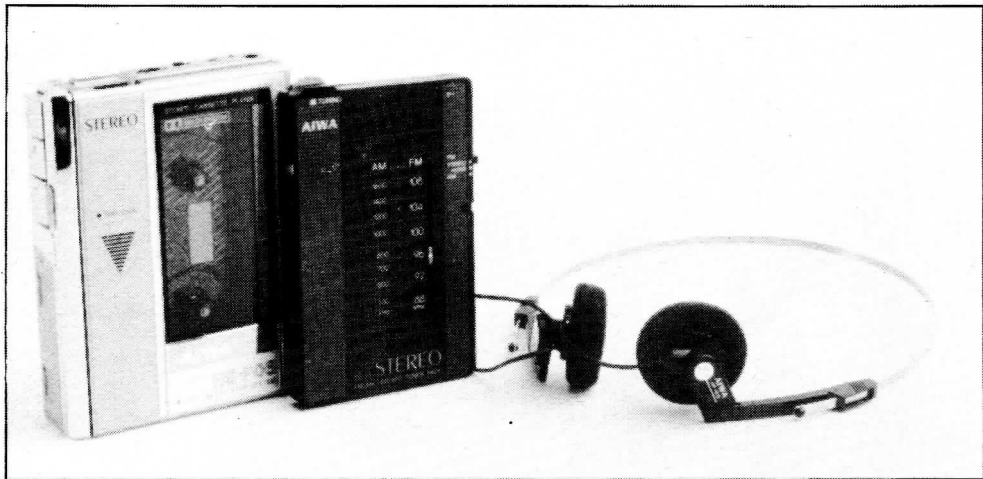


Aiwa HS-P06

Aiwa UK Ltd, Unit 2, Dukes Estate, Western Avenue, London W3 0SY
Tel 01-993 1672



The HS-P06 is distinguished by its small size and light weight. Although well made and fairly solid in feel, this personal stereo weighs just under 200gms — lighter than most. As usual though, small size means small batteries (two AAA's) and limited battery life.

Aiwa have left out auto-reverse, but included Dolby noise reduction. A cassette radio insert is included too. It receives stereo FM and medium wave AM broadcasts.

This stereo isn't covered in buttons and facilities like some — especially those with internal radio. The transport buttons had a nice positive action and a stop button is placed on top of the unit where it can be found quickly. This is useful at the end of fast winding a cassette, because auto-stop doesn't operate in this mode, as usual.

A feature to beware of on most Aiwas is the pause button. If the cassette refuses to work, this is usually at 'pause'. A red warning light comes on to warn of this with the P06, though. Aiwa fit a metal tape treble-cut switch, and an external power supply input too.

Frequency response was reasonably flat, although high treble fell away slowly above 6kHz. The headphones supplied sounded a bit clanky and lacked bass, as most do. Results with them were acceptable though, but better 'phones showed the P06 can sound quite impressive. Good adjustment and Dolby noise reduction helped to achieve this. It was better in sound quality than many, except Sanyo's

M-G55.

The radio has stereo FM and medium wave. Reception was noisy on stereo FM due to low sensitivity and inadequate headphone aerial lead. The radio was easy to tune though, and delivered fine sound quality — hiss apart.

Current consumption was low at 95mA, but end point high at 1.1V. Alkaline batteries should be used (type AAA/LR03). Life will be around 5hrs — comparatively limited.

The P06 proved an especially nice personal stereo; it was simple to use and gave good sound from radio and cassette.

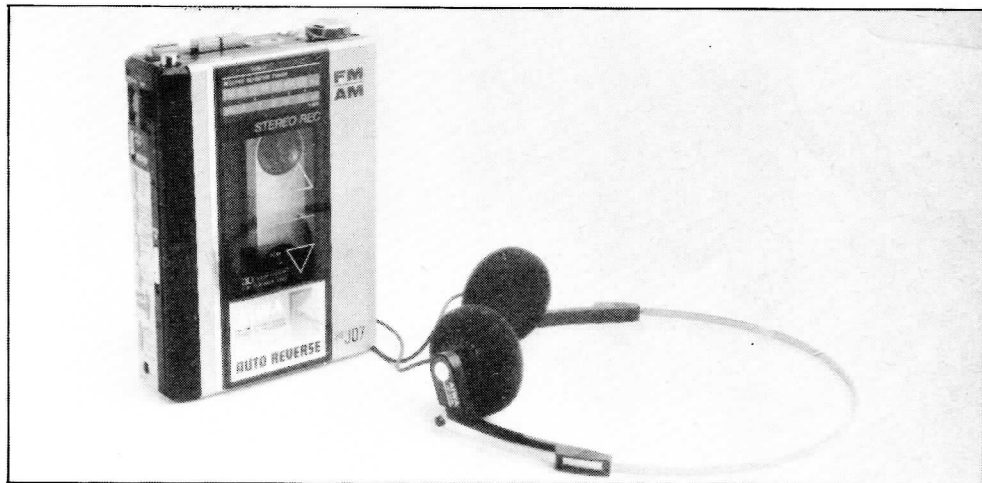
Cassette	
Frequency response.....	forward: 60Hz-6kHz reverse: —
Output.....	650mV
Speed accuracy.....	forward: + 0.4% reverse: —
Speed stability.....	0.25%
C60 rewind time.....	115secs
Tuner	
Frequency response.....	40Hz — 20kHz
Separation.....	— 30dB
Distortion.....	— 1%
Noise.....	— 59dB
Spurious output.....	19kHz: — 32dB 38kHz: — 69dB

Battery life	
Current consumption.....	95mA
End volts/battery.....	1.1V
Batteries required.....	No: 2 Type AAA
Life with 30mins/day use (alkaline).....	5 hrs

Weight.....	197 gms
Size (mm).....	110 high.....81 wide.....25 deep
Typical price inc VAT.....	£89

Aiwa HS-J07

Aiwa UK Ltd, Unit 2, Dukes Estate, Western Avenue, London W3 0SY
Tel 01-993 1672



This unit has a built-in radio, unlike the HS-U07 where it comes as a cassette insert. Built in radio is more convenient and has the benefit that recordings can be made from it. Aiwa have fitted the J07 with record circuitry, allowing it to record from radio, a microphone or a line source. Dolby noise reduction has also been fitted, but it only acts on cassette replay.

One drawback of an internal radio is that it increases both weight and size of the player. The J07 is quite heavy at 291gms and it is bulkier than the U07.

I was interested in a legend declaring the radio to be super-sensitive. This would reduce hiss on stereo FM transmissions — always a serious problem with personal stereo radios. It is difficult to measure sensitivity accurately, because of unsure aerial connection. However, hiss on stereo FM transmissions was low, and Aiwa supply a miniature whip aerial that did improve reception slightly. However, channel separation measured poorly (sounded almost like mono) and this was responsible for hiss reduction due to channel blending. I wonder whether this is deliberate.

Recordings made from radio and microphone were quite good. There isn't any form of recording level adjustment — either manual or automatic — but I still managed to get successful recordings without difficulty. The machine is adjusted for use with inexpensive ferric tapes, with which it has an adequate frequency response.

Cassette replay sound quality always sounded a bit dull, due to lack of extreme treble. The headphones supplied sounded bright and jangly — as most do. Better 'phones are worthwhile.

Battery current consumption was low at 110mA and usage good with an end point of 0.9V per battery. Two HP7 or LR6 (alkaline) batteries are needed. Alkalines give around 21hrs and HP7's around 11 hrs — a long life.

This unit was a bit complex, but it does nearly everything — and well. It is recommended for those who seriously do wish to record. Otherwise, the complexity, price and weight penalty go against it slightly.

Cassette

Frequency response.....	forward: 40Hz-12kHz
(±2dB).....	reverse: 40Hz-6kHz
Output.....	800mV
Speed accuracy.....	forward: +0.4%
.....	reverse: -0.8%
Speed stability.....	-0.15%
C60 rewind time.....	133secs

Tuner

Frequency response.....	90Hz - 9kHz
Separation.....	-17dB
Distortion.....	1%
Noise.....	-56dB
Spurious output.....	19kHz: -36dB
.....	38kHz: -60dB

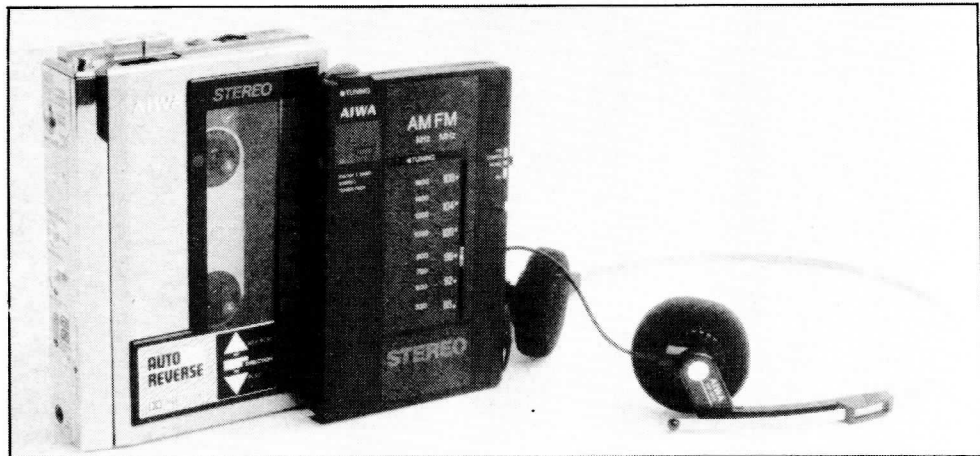
Battery life

Current consumption.....	110mA
End volts/battery.....	0.9V
Batteries required.....	No: 2 Type AA
Life with 30mins/day use.....	11 hrs

Weight.....	291 gms
Size (mm).....	117 high.....83 wide.....32 deep
Typical price inc VAT.....	£133

Aiwa HS-U07

Aiwa UK Ltd, Unit 2, Dukes Estate, Western Avenue, London W3 0SY
Tel 01-993 1672



This little unit felt and looked better made than most. Its metal case was sturdy, well finished and particularly smart. The construction didn't introduce any weight penalty though; the HS-U07 weighed a low 230gms and had compact dimensions too.

Small size has been partially achieved by use of smaller-than-usual AAA batteries. It is no use using anything other than alkaline batteries in this player, because it will knock ordinary types flat in an annoyingly short time. Current drain was low at 110mA but end point volts normal at 1V. Battery life with alkalines works out to about 5.5hrs, when playing cassettes. An external supply can be used and a warning light indicates low battery.

The cassette-insert radio consumes little current, as most do, so battery life is far greater with radio alone. The player has auto-stop that works in play mode, but it doesn't work in fast wind. To preserve battery life the unit must be manually stopped in this mode.

Aiwa have fitted Dolby noise reduction and a metal/normal treble cut switch. Auto-reverse has selectable modes, giving play of both sides or continuous play, where the machine must be manually halted. A music sensor system detects gaps between recordings.

Sound quality with the headphones supplied lacked bass, and sounded a bit tin-canny as a result; it wasn't unpleasant though. Good 'phones revealed an inherently dull sound — especially in reverse — caused by reverse azimuth error. Frequency response had falling

treble, the level in reverse being -6dB down at 10kHz, which is a lot. The Aiwa always sounded annoyingly muffled as a result. Speed accuracy was good, and so was speed stability.

The cassette radio has FM and AM sections, with stereo on FM. As usual, although measured performance was good on FM, in practice stereo reception was dominated by noise because of the inadequate headphone aerial lead. The radio was easy to tune though, and gave a very clear sound when fed a strong enough aerial signal.

This was a very nice machine to use, but spoiled by a muffled sound with cassette. For those who are not critical about sound quality, it is a good buy.

Cassette

Frequency response.....	forward: 90Hz-6kHz reverse: 90Hz-4kHz
Output.....	560mV
Speed accuracy.....	forward: +0.4% reverse: +0.3%
Speed stability.....	0.15%
C60 rewind time.....	120secs

Tuner

Frequency response.....	54Hz - 19kHz
Separation.....	-33dB
Distortion.....	0.3%
Noise.....	-61dB
Spurious output.....	19kHz: -31dB 38kHz: -56dB

Battery life

Current consumption.....	110mA
End volts/battery.....	1V
Batteries required.....	No: 2 Type AAA
Life with 30mins/day use (alkaline).....	5.5 hrs

Weight.....	230 gms
Size (mm).....	115 high.....82 wide.....26 deep
Typical price inc VAT.....	£110

Philips D6633

Philips Electrical Ltd, City House, 420-430 London Road, Croydon CR9 3QR
Tel 01-689 2166



This is a basic tape player, lacking auto-reverse, Dolby noise reduction and radio. Disingenuously, large arrows have been printed on the cassette compartment lid that suggest bi-directional play, but this is not possible. The player does have cue and review though, where the sound can be heard whilst fast spooling, to aid programme finding.

Frequency response displayed falling bass and treble. Speed accuracy was adequate, though +0.9% fast, and speed stability average at 0.25% total wow and flutter. Regular wow was heard on critical programme, but this is not unusual. The headphones gave a coarse sound and were not especially pleasant to use. Substituting Sennheiser HD40s brought about a great improvement, showing treble softness, even with Dolby tapes.

This player does not have a 'metal' switch to cut down treble from bright or Dolby encoded tapes, so it was fortunate that it had a naturally soft sound.

The D6633 looks good and is reasonably compact. It has a charcoal grey and black plastic case, and felt well made. Dimensionally it was of average size (see tests results), but at 321gms net (without batteries) it was also heavy. Philips supply only headphones and a shoulder strap, but no pouch.

The cassette compartment lid had a small window obscured by a grid of thick white lines, which made the tape impossible to see. This was very frustrating in use, making programme finding and playing time checks impossible.

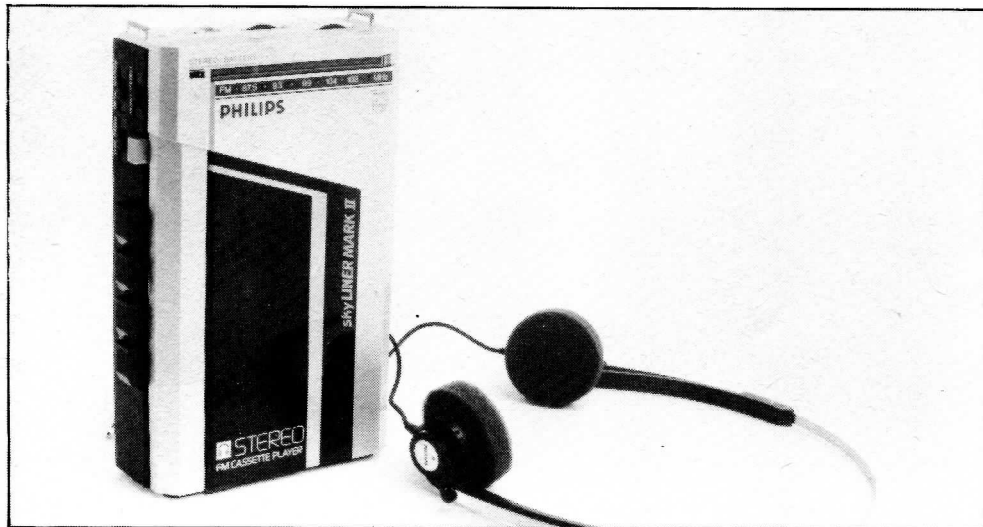
Unusually, three HP7/LR6 batteries are required, increasing battery costs by 33%. Current consumption was low at 115mA, but end volts high at 1V per cell. This gives a good life of around 10hrs for HP7s. However, auto-stop doesn't work with fast reeling, so the stop button must be pressed to maintain battery life. This player has no provision for external power input.

The D6633 proved a competent basic player, but it is sparse on facilities.

Cassette	
Frequency response.....	forward: 160Hz-6kHz reverse:
Output.....	990mV
Speed accuracy.....	forward: +0.9% reverse:
Speed stability.....	0.25%
C60 rewind time.....	98secs
Tuner.....	None
Frequency response.....	—
Separation.....	—
Distortion.....	—
Noise.....	19kHz: — 38kHz: —
Spurious output.....	—
Battery life	
Current consumption.....	115mA
End volts/battery.....	1V
Batteries required.....	No: 3 Type AA
Life with 30mins/day use.....	10 hrs
Weight.....	321 gms
Size (mm).....	137 high.....93 wide.....33 deep
Typical price inc VAT.....	£30

Philips D6638

Philips Electrical Ltd, City House, 420-430 London Road, Croydon CR9 3QR
Tel 01-689 2166



This is a larger player with built in radio, weighing a high 344gm, net. It has no recording facilities though, so cannot record radio programmes, like some. Unlike the large Sanyo M-G55, this player uses only two ordinary AA batteries, so large size does not mean increased battery costs.

The plastic case looked fairly smart but wasn't as impressive in apparent strength as metal-cased personal stereos: it looked a bit cheap too. All the transport buttons were easily accessible at the side of the case.

There are few facilities. Dolby is not fitted, nor auto-reverse. Treble-cut, available with a 'metal' switch, reduces the brightness of Dolby encoded recordings.

The radio is stereo FM only. Lack of medium wave means Radio 1 is not obtainable — something of a drawback for a device that, to most people, is meant to offer light entertainment. Hiss is a problem in stereo, as is so often the case where the headphone leads act as an aerial. A mono switch counter-acts this, with loss of stereo effect.

Sound quality with radio was obviously tonally coloured. This was due to both the headphones and limited treble response from the tuner. In spite of being FM, it had a frequency response much like an AM tuner — unlike its competitors, which give near perfect results. Better headphones clearly showed this

limitation. The tuner section of this unit was pretty mediocre in general, compared with rivals, lacking both treble and medium wave.

The headphones coloured cassette reproduction substantially. Better 'phones are needed, and showed the D6638 can give quite respectable sound quality from cassette. Treble clarity was greater than usual.

Current drain was high-ish at 125mA (cassette) and end point high at 1.1V. Alkaline batteries are needed, giving around 12hrs life.

This player has little to recommend it against strong competition.

Cassette

Frequency response.....forward: 40Hz-9kHz
reverse: —

Output.....690mV

Speed accuracy.....forward: +1.5%
reverse: —

Speed stability.....0.15%

C60 rewind time.....—

Tuner

Frequency response.....100Hz - 4.5kHz

Separation.....-32dB

Distortion.....-1%

Noise.....-60dB

Spurious output.....19kHz: -42dB

38kHz: -78dB

Battery life

Current consumption.....125mA

End volts/battery.....1.1V

Batteries required.....No: 2 Type AA

Life with 30mins/day use (alkaline).....12 hrs

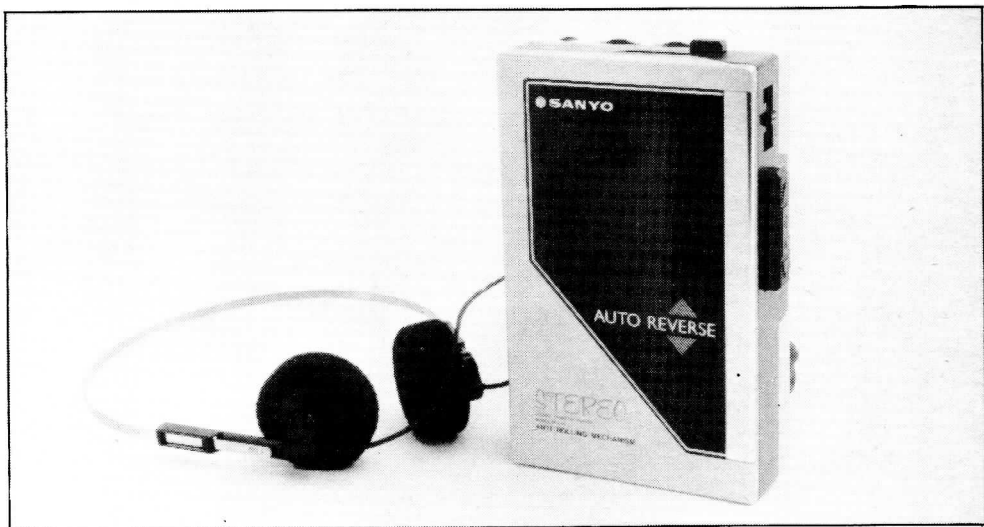
Weight.....344 gms

Size (mm).....146 high.....92 wide.....38 deep

Typical price inc VAT.....£50

Sanyo M-G55

Sanyo Marubeni (UK) Ltd, 8 Greycaine Road, Watford, Herts WD2 4QU
Tel (0923) 46363



This is a large player that takes four AA batteries, instead of two. This increases its weight from a high 203gms without batteries to no less than 430gms total, with four Mallory L6 Duracells. This player is portable, but not the sort of thing you would put in your pocket. It would hardly fit most pockets because of its size, and the 430 gms weight is enough to threaten the security of a trouser belt!

Being large makes the M-G55 easy to use and stable. It also had a lot of undistorted volume and sounded remarkably clean. I suspect the 6V operating line gave this player rather better electronic performance than usual, and possibly a better transport and head assembly too. It certainly sounded much cleaner and more detailed in its sound than most stereos. Lack of Dolby noise reduction was a drawback with this sort of quality. The headphones supplied sounded quite good though; they had more bass than usual and less jangly treble.

Although Dolby is not fitted, the player has auto-reverse. It also has a tone control that provides adjustable treble cut. This was most useful when playing Dolby encoded tapes that otherwise sound too bright.

Current consumption was low at 90mA and end point also low at 0.9V per battery. This gives a life of around 13hrs with HP7s and 26hrs with alkaline's like Ever Ready Gold

Seals. However, whilst this is long, it still isn't enough to compensate for the fact that there are four batteries to replace — twice as expensive as stereos with two batteries.

For those who want sheer quality and don't mind about the size, weight and battery replacement cost of this player, the M-G55 is required listening. It sounds significantly better than most personal stereos and is very easy to use too. This made listening compulsive with good tapes, giving the player good entertainment value. What a pity it didn't have Dolby.

Cassette

Frequency response.....	forward: 125Hz-7kHz
	reverse: 125Hz-8kHz
Output.....	1V
Speed accuracy.....	forward: -0.2%
	reverse: -1%
Speed stability.....	0.25%
C60 rewind time.....	127secs
Tuner.....	None
Frequency response.....	—
Separation.....	—
Distortion.....	—
Noise.....	—
Spurious output.....	19kHz: —
	38kHz: —

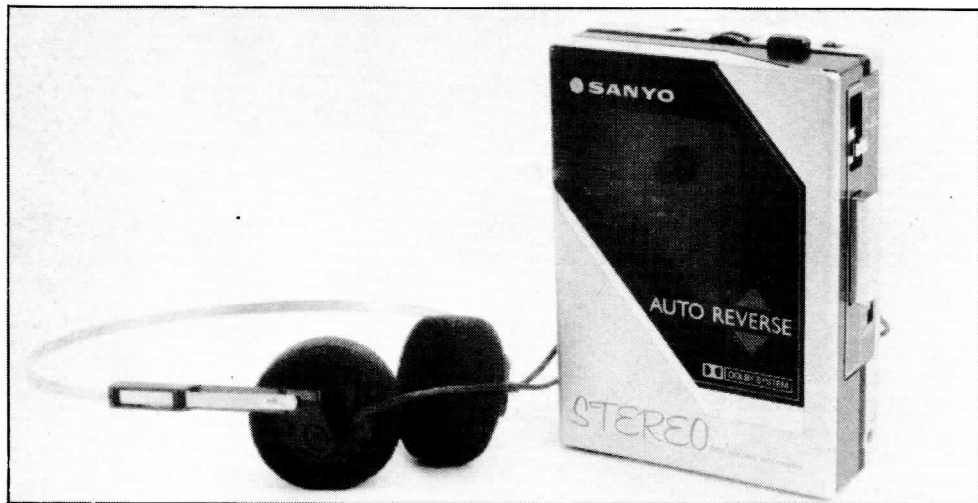
Battery life

Current consumption.....	90mA
End volts/battery.....	0.9V
Batteries required.....	No: 4 Type AA
Life with 30mins/day use.....	13 hrs

Weight.....	302 gms
Size (mm).....	142 high.....90 wide.....36 deep
Typical price inc VAT.....	£41

Sanyo MG-80D

Sanyo Marubeni (UK) Ltd, 8 Greycaine Road, Watford, Herts WD2 4QU
Tel (0923) 46363



The MG-80D is a light and compact player, lacking radio but fitted with Dolby B noise reduction. As a result, it plays Dolby cassettes properly, avoiding the hissy brightness that non-Dolby machines suffer with such recordings.

This is also an auto-reverse player. It will either play along one side and then the other, continuously, or, at the flick of a switch, play both sides and then stop. A treble cut switch accommodates normal or chrome/metal tapes, ensuring even tonal balance with the latter or being useful for treble cut with the former.

Sanyo fit twin independent edge-wise volume controls, so that channel balance can be adjusted. Fast wind is selected with a slide switch and the same switch doubles as a play direction selector. Auto-stop works on play mode, but not in fast wind, so to save the batteries the machine must be manually switched off after winding. It takes 2mins to fast-wind a C60, which is about average.

Two HP7/LR6 batteries are required, as usual. Current drain is low at 110mA and end volts also low at 0.9V per battery. This results in around 11hrs life, which is comparatively long. An external power supply can be used.

Measurement showed the frequency response suffered treble fall above 4kHz and this produced a soft sound. The Sanyo headphones showed were 'clattery' in sound quality, due to dominant output around 5kHz;

there was little bass or extreme treble. Better headphones helped matters considerably, but dullness was always suffered.

Speed was +1.2% fast, running forward, and -1.2% slow in reverse. This wasn't startlingly obvious in use, but could be detected. Critical users may be vexed.

The MG-80D is supplied with a case, belt clip and shoulder strap. It was a nice player to use, but sound quality proved frustratingly dull on our sample and this was disappointing. It never sounded as clear and well defined as the Sonys, for example.

Cassette

Frequency response.....forward: 60Hz-6kHz
reverse: 60Hz-6kHz

Output.....865mV

Speed accuracy.....forward: +1.2%
reverse: -1.2%

Speed stability.....0.25%

C60 rewind time.....120secs

Tuner.....None

Frequency response.....-

Separation.....-

Distortion.....-

Noise.....-

Spurious output.....19kHz: -
38kHz: -

Battery life

Current consumption.....110mA

End volts/battery.....0.9V

Batteries required.....No: 2 Type AA

Life with 30mins/day use.....11 hrs

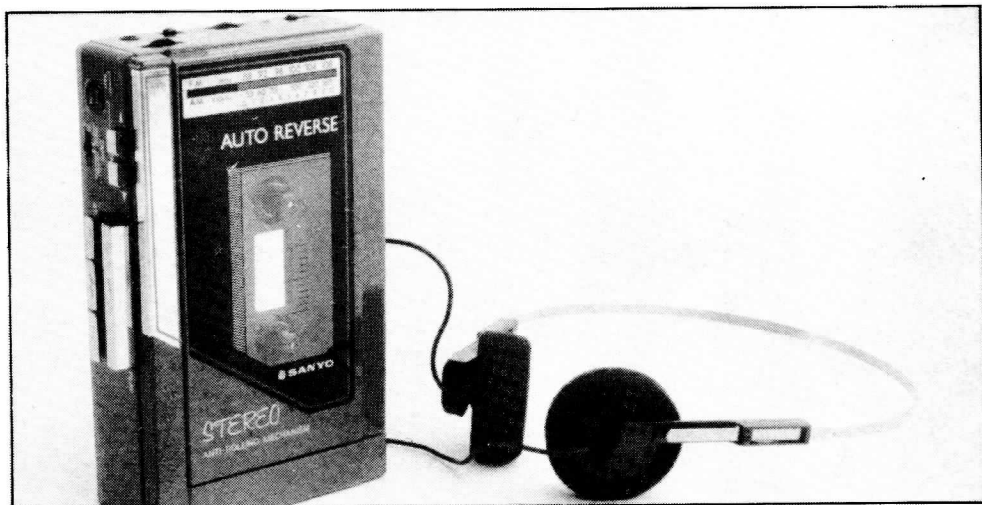
Weight.....260 gms

Size (mm).....117 high.....87 wide.....36 deep

Typical price inc VAT.....£82

Sanyo M-G95

Sanyo Marubeni (UK) Ltd, 8 Greycaine Road, Watford, Herts WD2 4QU
Tel (0923) 46363



The MG-95 is an auto-reverse unit with a built in FM/AM radio that has stereo on FM. Optional reverse modes weren't available; it keeps on reversing at both ends of a tape until manually stopped. Dolby is not fitted.

Our review sample had a bright red plastic case and silver control buttons. It was gaudy but eye-catching. Construction quality was mediocre, and both size and weight (see performance table) somewhat greater than many mini-models now available. Sanyo sent this particular sample without case or accessories, so we cannot comment on these, unfortunately. We used the headphones from the Sanyo MG-34T for sound quality assessment.

Tests showed falling treble from the unit, when playing in either direction. The Sanyo headphones were bright and tinny sounding, so they largely disguised this property — and rather confused the sound at the same time. Our Sennheiser HD40 reference 'phones showed the M-G95 was capable of delivering a clear sound, but with soft treble. Like most personal stereos, this one benefits from good headphones.

Speed accuracy was good in both directions. There was some cyclic wow tht will be heard as unsteadiness on critical programmes, like sustained piano notes: performance here was mediocre. Rewind time was long at 2mins:39secs for a C60; some stereo's managed 1min:40secs.

Radio performance measured well, but quality was dominated by use of the head-phone lead as an aerial. Reception was often very noisy because of this. The radio usefully reverts to mono mode automatically at low signal levels.

Battery consumption figures were fairly good, with a life of around 8hrs using two standard HP7 cells.

The M-G95 worked well and had no weaknesses. It is large and heavy compared with many stereos though, and it benefits from better headphones than those supplied.

Cassette

Frequency response.....	forward: 70Hz-6kHz
	reverse: 70Hz-6kHz
Output.....	700mV
Speed accuracy.....	forward: +0.7%
	reverse: +0.3%
Speed stability.....	0.25%
C60 rewind time.....	159secs

Tuner

Frequency response.....	170Hz - 10kHz
Separation.....	-28dB
Distortion.....	0.4%
Noise.....	-59dB
Spurious output.....	19kHz: -34dB
	38kHz: -58dB

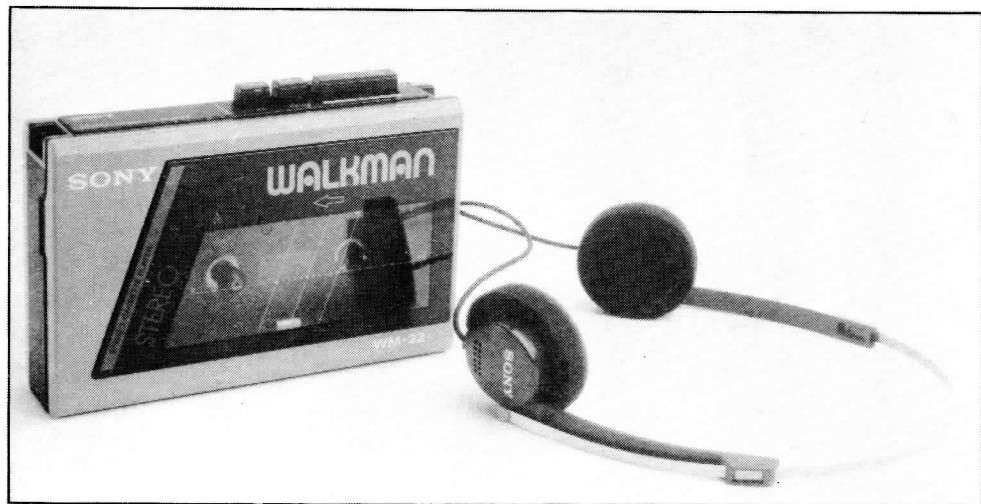
Battery life

Current consumption.....	133mA
End volts/battery.....	1V
Batteries required.....	No: 2 Type AA
Life with 30mins/day use.....	8 hrs

Weight.....	310 gms
Size (mm).....	142 high.....91 wide.....37 deep
Typical price inc VAT.....	£70

Sony WM-22

Sony (UK) Ltd, Sony House, South Street, Staines, Middlesex TW18 4PF
Tel Staines 61688



The WM-22 is the latest basic Walkman from Sony ('Walkman' is Sony's registered name, by the way). Ours had a bright powder-blue plastic case with black trim.

This Walkman has few facilities. It has single direction play, no Dolby system and no protective pouch. It does have an external power socket, fast wind in both directions, a treble cut switch for metal or Dolby encoded tapes and a battery warning indicator. Auto-stop worked in play mode, but not with the fast wind or rewind. To save batteries, the player must be manually switched off at the end of fast winding.

Frequency response was flatter than usual with this unit. This is always the case with Sony machines — they are better adjusted than most. Speed was +0.7% fast, which is an acceptable error. Speed stability proved very good, measuring 0.12% total wow and flutter. This gave a noticeable improvement in steadiness with some programmes.

Using the headphones supplied, the sound was very bright and thin. There was a piercing quality to it, characteristic of excessive high treble. Using decent headphones — our reference Sennheiser HD40s — showed that sound quality was potentially very good, with more bass than usual. As we so often found, the phones supplied do it little justice.

Battery current consumption was very high at 160mA and so was the 1.1V end figure. This

resulted in a life of around 4hrs — 50% that of many other players. For convenience the WM-22 is best used with alkaline batteries, such as Mallory Duracells. It takes two Mallory LR6s, or ordinary Ever Ready HP7s.

Fast wind times were very respectable. Doubtless, the high current consumption of this player is due to a powerful motor, and this also gave it a higher wind speed.

The WM-22 proved to be a nice basic player. It is let down by its headphones — like all personal stereos. Sound quality was better than usual though, so better headphones are proportionately more useful.

Cassette

Frequency response.....	forward: 45Hz-10kHz	reverse: —
Output.....	1V	
Speed accuracy.....	forward: +0.7%	reverse: —
Speed stability.....	0.12%	
C60 rewind time.....	118secs	
Tuner.....	None	
Frequency response.....	—	
Separation.....	—	
Distortion.....	—	
Noise.....	—	
Spurious output.....	19kHz: —	38kHz: —

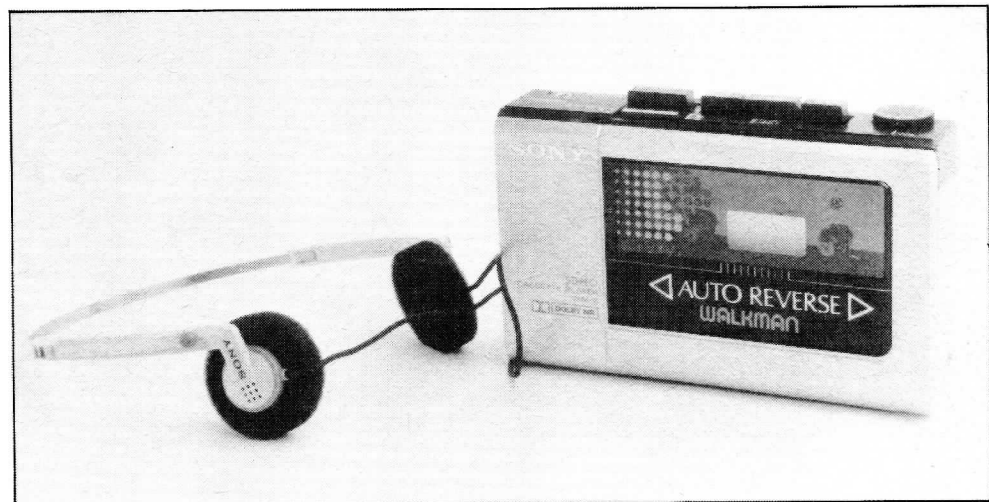
Battery life

Current consumption.....	160mA
End volts/battery.....	1.1V
Batteries required.....	No: 2 Type AA
Life with 30mins/day use.....	4 hrs

Weight.....	218 gms
Size (mm).....	132 high.....90 wide.....32 deep
Typical price inc VAT.....	£30

Sony WM-6

Sony (UK) Ltd, Sony House, South Street, Staines, Middlesex TW18 4PF
Tel Staines 61688



This is an auto-reversing player fitted with Dolby noise reduction. As Sony's Walkmans go, it is large; it is also made of plastic and both felt and looked inferior to Sony's original metal Walkmans. A shoulder strap is supplied with this unit, but not a pouch.

The auto-reverse system offers continuous play only. It doesn't have any options, like some players, but this is unlikely to worry most users, I feel. In addition to Dolby, a 'metal' tape selector switch is fitted that can cut treble and soften bright sounding cassettes. A large direction button actuates reverse manually, though the system was a bit slow about it.

A nuisance with this player was its insistence on playing in a forward direction after fast reeling. If playing in reverse, after winding through an unwanted track, the player would end up playing the wrong side of the tape. A useful feature was cue and review, which tended to offset this problem. It allowed a speeded up version of music to be heard whilst reeling, but volume had to be turned down before using this facility.

Two AA batteries are used, but a high current consumption of 135mA gives only 7hrs life, or thereabouts, from HP7s and the like. Alkalines give about 15hrs. Tests showed also that speed is battery voltage dependant — an unusual characteristic. Our machine ran fast with full battery volts and slowed down as the batteries discharged. This is very unusual and was

probably a sample fault.

The headphones gave a bright sound but were quite reasonable all the same. Better 'phones showed this player — like most Sonys — gave superior sound to most.

It was obviously better adjusted, enabling the Dolby system to reduce noise without dulling treble. The only qualification in our case was poor speed accuracy and stability, which was subjectively obvious.

In spite of this, the WM6 was impressive to listen to. This fact, coupled with the convenience of auto-reverse and the simplicity of its controls, make it a good choice.

Cassette

Frequency response.....	forward: 80Hz-8kHz
	reverse: 80Hz - 10kHz
(±2dB)	
Output.....	760mV
Speed accuracy.....	forward: + 0.8%
	reverse: + 1.2%
Speed stability.....	0.2%
C60 rewind time.....	128secs
Tuner.....	None
Frequency response.....	—
Separation.....	—
Distortion.....	—
Noise.....	—
Spurious output.....	19kHz: —
	38kHz: —

Battery life

Current consumption.....	135mA
End volts/battery.....	1V
Batteries required.....	No: 2 Type AA
Life with 30mins/day use.....	7 hrs

Weight.....	289 gms
Size (mm).....	92 high.....137 wide.....40 deep
Typical price inc VAT.....	£70

Sony Sports Walkman WM-F5

Sony (UK) Ltd, Sony House, South Street, Staines, Middlesex TW18 4PF
Tel Staines 61688



before the case is closed. One annoyance here was lack of automatic reversion to mono with weak stereo FM signals, in order to reduce hiss. Another was inability to listen to radio whilst the cassette was rewinding.

Transport controls consist of fast forward and reverse buttons, a play button, an off button and a radio selector entitled 'FM'. All these are sealed. If the FM button is pressed whilst playing, the cassette stops and radio starts, so changing from one to the other is very simple. In fact, this was a very simple unit to use.

The main drawback of the Sports was highish weight of 332gms, a bulky case and slightly awkward cassette changing. However, speed stability was perfect, even when the unit was shaken.

Within the cassette compartment is the battery compartment that accepts two HP7/LR6/AA batteries. Current consumption was average at 120mA (52mA for radio) but the end point low at 0.9V per battery. Alkaline LR6 batteries give around 19hrs and ordinary HP7's around 10hrs — respectable figures.

Sound quality was good from both radio and cassette. The earphones supplied were better than many, but fell out of the ear easily. Otherwise the Sports was a nice solid machine and gave good results.

The 'Sports' is an eye catcher. It is made of bright yellow polypropylene, which felt solid and durable — unlike the brittle-plastic personal stereos which feel as if they would crack or break if dropped on a hard surface.

Sony say that ... 'although your Walkman and the supplied earphones are designed to be waterproof, the equipment is not designed for underwater use'. The cassette lid has a rubber seal and clamps down firmly to shut out water.

There are few controls. On top are volume and tuning knobs, the latter being for the stereo FM radio (no medium wave). Two sets of phones can be used, the sockets having rubber bungs and soft rubber sealing surrounds. There is a socket for external power, again sealed with a bung.

The cassette plays in one direction only, and Dolby is not fitted. A metal tape switch that gives treble cut and a mono switch are accessible inside the unit, so must be set

Cassette

Frequency response.....forward: 90Hz-8kHz
reverse: —

Output.....900mV

Speed accuracy.....forward: + 0.6%
reverse: —

Speed stability.....0.05%

C60 rewind time.....—

Tuner.....none

Frequency response.....—

Separation.....—

Distortion.....—

Noise.....—

Spurious output.....19kHz: —
38kHz: —

Battery life

Current consumption.....120mA

End volts/battery.....0.9V

Batteries required.....No: 2 Type AA

Life with 30mins/day use.....10 hrs

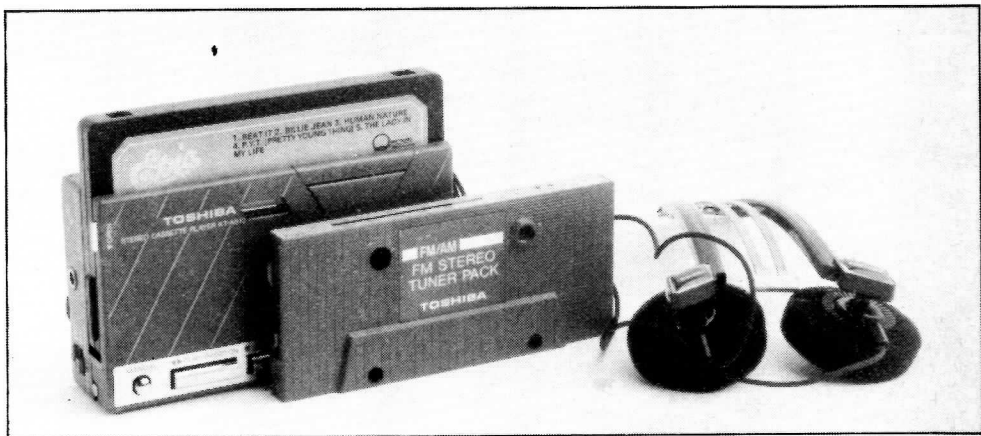
Weight.....332 gms

Size (mm).....120 high.....102 wide.....40 deep

Typical price inc VAT.....£100

Toshiba KT-AS10

Toshiba (UK) Ltd, Toshiba House, Frimley Road, Camberley GU16 5JJ
Tel (0726) 62222



This player is so small, it is smaller than a cassette! Being so small means it is very light (214gms) and can be stowed or carried easily. Things get interesting when playing a cassette though, because the cassette sticks out. Ideally, the player stands upright, sitting on four dimples that act as feet. Toshiba don't stop at small size though — this player is also auto-reverse, it has Dolby reduction and it has a cassette-radio insert!

Because the cassette compartment is exposed, dirt and fluff will cause problems very quickly unless it is covered and protected. A carrying pouch is provided, which accepts the player when a cassette is in it. Unfortunately, the unit cannot be operated whilst it is zipped up in this pouch.

The KT-AS10 is well made and feels quite solid. Ours was finished in bright red, with silver trim. Fast reeling is activated by pressing a panel that contacts one of the drive hubs, adding yet another innovative feature to an already unusual player. It won't be long before credit cards play cassettes at this rate, since they can already act as light-powered calculators!

In a player of this size it is inevitable that small AAA batteries should be used, two being needed. Current consumption was average at 125mA, but the battery end point was high at 1.1V. With alkalines, such as Mallory Duracells or Ever Ready Gold Seals, type LR03 (AAA), a life of only 4 hrs can be expected — considerably less than that of other personal stereos. This is a problem with the KT-AS10

but, to their credit, Toshiba have tackled it by providing a separate battery holder. This takes two 'U2' batteries that give very long life but increase total size, of course. Use of rechargeables may be considered or, alternatively, an external power supply can be used. Frequency response was fairly flat and speed stability average. Sound quality with cassette was good, as a result. The insert-radio measured well and sounded impressively clear. Noise wasn't as much of a problem as usual on stereo, suggesting high sensitivity; medium wave is fitted too, while use of the radio extends battery life.

This miniature player worked very well in all areas and was easy to use. It is highly innovative and can be recommended: only battery life is a problem.

Cassette

Frequency response.....	forward: 100Hz-10kHz
	reverse: 100Hz-12kHz
Output.....	750mV
Speed accuracy.....	forward: -0.2%
	reverse: +0.6%
Speed stability.....	-0.25%
C60 rewind time.....	290secs

Tuner

Frequency response.....	125Hz - 9.3kHz
Separation.....	-29dB
Distortion.....	-0.8%
Noise.....	-61dB
Spurious output.....	19kHz: -35dB
	38kHz: -65dB

Battery life

Current consumption.....	125mA
End volts/battery.....	1.1V
Batteries required.....	No: 2 Type AAA
Life with 30mins/day use (alkaline).....	4 hrs

Weight.....	214 gms
Size (mm).....	101 high.....57 wide.....30 deep
Typical price inc VAT.....	£100