

Manuf.	Cart model	Stylus used	Mo/St/St.C.	Output	Trk G
BSR					
	TC8M		M	400mv/1.2cm-s	6-9
	TC8H-1	TC8r (LP), TC8g(78)	M	800mV/1.2cm-s	7-10
	TC8H/2	see above	M	1.1V/1.2cm/s	
	TC8S	TC8S	ST	150mv	
	X3H	ST8, 9, 10	M-SC	700mV/1.2cm-s	5-7
	X3M	ST3/4	M-SC	350mV/1.2cm-s	4-6
	X5H	ST8/9/10	M-SC	1v/1cm-s	5-9
	X5M	ST12/14/15/19	M-SC	400mv/1cm-s	3-6
	SX2H	ST3/4	ST	350mV/1.2cm/s	5-7
	SX5H	ST12/14/15/19	ST	700mV?	
	SX5M	ST12/14/15/19	ST	500mV?	
	SX6M	ST12/14/15/19	ST	280mV/1cm-s	4-6
	SX6H	ST12/14/15/19	ST	700mV/1cm-s	5-7
	211	ST8/9/10	M-SC	460mV/1cm-s	4-6
	C1	ST12/14/15/19	ST	110mv/1cm-s	2-6
	SC5M	ST12/14/15/19	ST	100Mv	3-6
	SC5H	ST12/14/15/19	ST	190mV	3-6
	SC7M	ST16/17/20/21	ST	190mv?	2-6
	SC11/12m	ST16/17/20/21	ST	100mv	2-6
	SC12H	ST16/17/20/21	ST	190mV?	2-6
ACOS					
	Hi-G		M	1V?	
	GP104	same	ST	100mV/1cm-s.	3-4
	GP91-1SC	same	M-SC	200mV	
	GP91-2SC		M-SC	360mV	
	GP91-3SC		M-SC	630mV	
	GP93		ST	280mV	
	GP95		ST	280mV	
	GP92SC		M-SC	140mV	
	GP94-1, 96-1		ST	100mV	
	GP94, GP95		ST	50mV	
SONOTONE/garrard					
	9TA	9TA, 9TAHC	ST	200mV	
	9TAHC	9TAHC	ST	70mV/1cm-s	2-4
	8T		ST	300mV	
	3509		ST	140mV	
	GCS36/2509	GDD1, GSS1 etc	ST		
	PXM1H	GDD1, GSS1	m-sc	300mv?	
RONETTE					
	105	SA-75/100(Lp) /SA-250 (78)	ST	250mV	3-6
	BF40	SA-75/SA-100	ST	180mV	5-7

# **INSTRUCTIONS FOR USING GARRARD CARTRIDGES**

The crystal or ceramic cartridge may be used as direct replacements for other crystal or ceramic cartridges of similar specification. If in any doubt, assistance should be sought from your local dealer. We recommend a cartridge loading of 1 to 2 Megohm and 100 pF.

## **Caution**

Do not solder leads directly to the cartridge. Please use clips provided and then push onto tags in cartridge body. Also, ensure that leads are not shorted to each other or to tone arm.

## **Recommended Stylus Force**

Mono Crystal	- GCM 31	6 - 8 grams
	- GCM 33	3 - 5 grams
Stereo Crystal	- GCS 36	6 - 8 grams
	- GCS 38	3 - 5 grams
	- GCS 35	8 - 10 grams
Stereo Ceramic	- KS 40A	5 - 7 grams
	- KS 41A	6 - 8 grams
	- KS 41B	3 - 6 grams
	- KS 41C	2 - 4 grams

## **Replacement Styli**

	Single Sapph	Single Dia	Sapph Sapph	Sapph Dia	Dia Dia
GCM31	GS1	GD1	GSS1	GDS1	GDD1
GCM33	GS2	GD2	GSS2	GDS2	GDD2
GCS 36	GS1	GD1	GSS1	GDS1	GDD1
GCS 38	GS2	GD2	GSS2	GDS2	GDD2
GCS 35	GS1	GD1	GSS1	GDS1	GDD1
KS 40A	AS	AD	ASS	ADS	ADD
KS 41A	AS	AD	ASS	ADS	ADD
KS 41B	BS	BD	BSS	BDS	BDD
KS 41C	CS	CD	CSS	CDS	CDD

**Monarch**



## CERAMIC CARTRIDGE TYPE C1

### Technical Data

Colour	.. .. .	White
Compliance	.. .. .	$5.2 \times 10^{-6}$ cm/dyne
Sensitivity at 1 Kc/s using Decca SXL		
2057 record — 1 cm/sec	..	0.110 volts $\pm$ 2 db
Stylus pressure (depending upon tone arm)	.. .. .	2 - 6 grammes
Equivalent capacity	.. .. .	600 pF
Loading	.. .. .	2 M $\Omega$ 100 pF
Measuring temperature	.. .. .	68°F. 20°C.
Channel difference	.. .. .	less than 3 db
Channel separation at 1Kc/s	..	20 db



### SPECIFICATION

	<u>T.C.8M</u>	<u>T.C.8H/1</u>	<u>T.C.8H/2</u>
Compliance ... ..	$2.0 \times 10^{-6}$ cm/dyne	$2.0 \times 10^{-6}$ cm/dyne	$1.4 \times 10^{-6}$ cm/dyne
Sensitivity at 1000 cps. 1.2 cm/sec. ... ..	0.400 Volts $\pm$ 2dB.	0.800 Volts $\pm$ 2dB.	1.1 Volts $\pm$ 2dB.
Equivalent Capacity ... ..	1250 uuF.	1250 uuF.	1250 uuF.
Loading ... ..	1 meg. 100uuF.	1 meg. 100 uuF.	1 meg. 100 uuF.
Measuring Temperature ...	68°F.	68°F.	68°F.
"L.P." stylus tip radius ...	.001"	.001"	.001"
"78" stylus tip radius ...	.0025"	.0025"	.0025"
Stylus Pressure depending on tone arm construction ...	6 - 9 grams.	7 - 10 grams.	7 - 10 grams.

It is advisable to reduce the stylus pressure towards the lower limit, providing the pickup arm friction in the vertical and horizontal bearings is sufficiently low to allow the arm to track.

This ACOS cartridge is designed to play Stereo records.

Crystal Cartridges		GP91 SC	Mono (Stereo Compatible)
GP93-1	Stereo	GP95-1	Stereo
Technical Specifications			
Frequency response	91-15C	91-25C	91-35C 93 x 95
	50-17k	50-17k	50-15k 30-18k Hz
Output at 1cm/sec.	—	—	280 mV
Output at 12cm/sec.	200	360	630
Recommended pressure	3-6	5-10	5-10 4-8 gms
Recommended load	not less than 1 megohm		

Ceramic Cartridges		GP92 SC	Mono (Stereo Compatible)	
GP94-1 x GP96-1		Stereo	GP94 5	Stereo
Technical Specifications				
Frequency response		92SC	94-1/96-1	94-5
		40-16k	30-14k	30-14k Hz
Output at 1cm/sec.		—	100	55 mV
Output at 12cm/sec.		140	—	—
Recommended pressure		5-10	3-6	3-6 gms
Recommended load		not less than 1 megohm 200 k.ohms		
Operating temperature		0° — 40°C		
Stylus — Stereo		.0005" — .0007"		
		78	.0025" — .003"	
GP95 x GP96 fitted with 2 stereo tips				
Diamonds are denoted by gold spot on stylus.				

Warning — A worn stylus will damage your valuable records. Change Sapphire after 25 — 30 hours playing time and a Diamond after 500 — 600 hours.

#### CHANGING THE STYLUS

Ensure cartridge flag is pointing towards the centre of the turntable and remove the stylus as shown in the drawing — lifting at point (a).

Do not attempt to remove flag.

When fitting a new stylus make sure it is seated

correctly and that the metal stylus arm sits in the

V shaped groove (b).

The styli fitted to ACOS

cartridges are designed as an

integral part of this assembly

and only ACOS approved

replacements should be used.



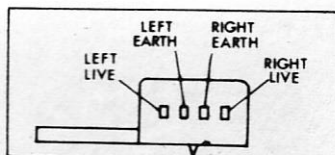
#### BRACKETS

Most ACOS cartridges have a standard bracket for a centre hole or 2 slots  $\frac{1}{4}$ " centres. Other special brackets are available on request.

#### TAGS

Slide on tags for the attachment of leads are supplied with all cartridges. It can cause irreparable damage to solder leads direct to the cartridge pins.

Stereo cartridge contacts viewed from the rear in the playing position.



#### STYLI

The stylus for the GP91SC range is not interchangeable for stereo cartridges. Stereo stylus for GP93 & 94 should not be used for GP91 & GP92.

#### STYLUS REPLACEMENT.

We recommend Pinnacle replacement DIAMOND styli, as follows:

PXM1M	...	Pinnacle P6500
PXM1H	...	P6499
PXS2M	...	P6499
PXS2H	...	P6499

#### STYLUS TURN-OVER ARM:

It may be necessary to fit the black plastic extender provided to the stylus turn-over arm when the cartridge is fitted to a broad pick-up "shell".

### Pinnacle replacement Pick-up cartridges

**PXM1M** (crystal, medium output)

**PXM1H** (crystal, high output)

Mono stereo-compatible cartridges, i.e. monaural, but capable of playing stereo records monophonically.

**PXS2M** (crystal, medium output)

**PXS2H** (crystal, high output)

Cartridges with full stereo capability.

#### Please read these fixing instructions carefully

**Brackets:** Pinnacle cartridges are supplied with two different mounting brackets which between them provide fixing arrangements for practically any playing head in current use. Install the bracket first. The cartridge simply clips in to the bracket after the lug at the terminal end of the cartridge has been engaged. NB: It is recommended that the white polystyrene stylus shield be kept in place until the cartridge is permanently in position.

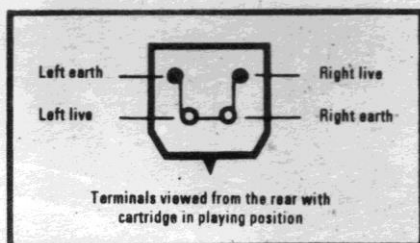
**Tags:** Slide-on tags are supplied with all Pinnacle cartridges for the attachment of the pick-up leads. **DO NOT SOLDER THE LEADS DIRECTLY TO THE TERMINALS.** Intense heat will damage the cartridge irreparably.

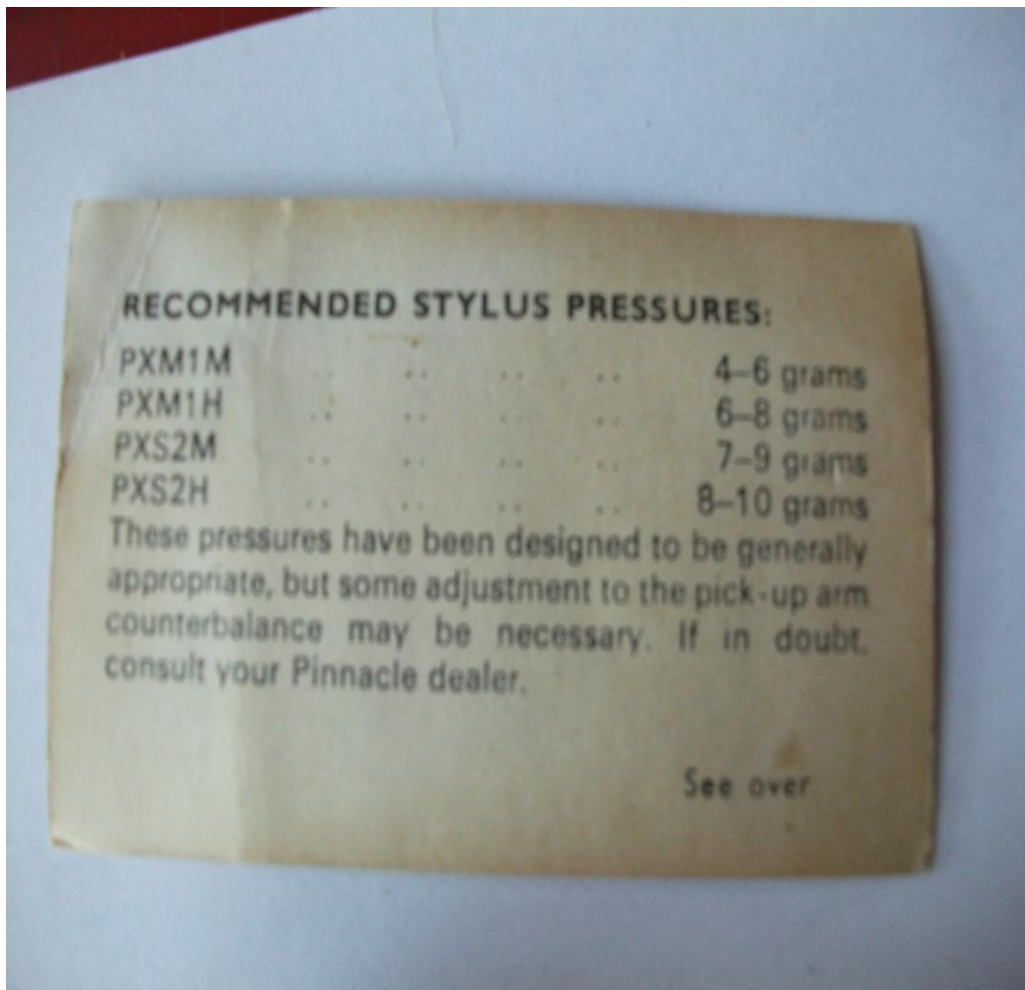
#### Connections:

PXM1M and PXM1H have two terminals. It is immaterial which pick-up lead is connected to which terminal.

PXS2M and PXS2H have four terminals.

Connections should be made in accordance with the following diagram:





[te from: GP49 on July 24, 2009, 03:12:04 PM](#)

There were several different Sonotone 9 series bodies that I know of. The standard 9TA was the lower-compliance version (specification:  $5.5 \times 10^{-6}$  cm/Dyne). I tried it in a Dual 1009 once (it's still at my Mom's house, I have to remember to recover it, some Garrards and a Dynaco SCA-35/FM-3 tube system!) and found it tracking well at 3 grams and up (Sonotone claimed 2 grams). The 9TAHC, introduced 1964 or so, was the high-compliance model ( $15 \times 10^{-6}$  cm/Dyne). It tracked well at 2 grams (Sonotone claimed 1.5 grams). Its specified output was half that of the standard 9TA. As a whole the Sonotone 9 series were the best of the "conventional" ceramic cartridges I ever encountered.

The styli for the 9 series first came in a solid plastic grip with cantilever attached. Shortly after the introduction of the 9TA, Sonotone changed the stylus to a "Sono-Flex" version with the cantilever attached via a flexible rubber bushing. You could actually flex the cantilever backwards in its rubber bushing and not damage it. The REAL reason, I was told later by an ex-Sonotone sales representative, was the 9TAHC version, whose ceramic elements were more flexible than the standard ones and which didn't work properly with the original, non-rubber bushed stylus...the stiffness of the stylus would permanently deform the ceramic elements over time. When the "Sono-Flex" variant was introduced, all the cartridges were equipped with it from the factory and the model designations gained the letter "F": 9TAF, 9TAFHC. The lettering embossed in the cartridge bodies never changed: they still said "9TA" and "9TAHC".



Styli and cartridges in the 9 series were available with LP/78 sapphire tips (suffix -S, hence 9TAF-S); LP diamond/78 sapphire (suffix -SD, hence 9TAF-SD); and LP diamond/LP sapphire (suffix -D77, so 9TAF-D77; the 9TAFHC versions were only sold with this one, hence 9TAFHC-D77).

The Sonotone "Velocitone" was the 9TAFHC body and "Sono-Flex" stylus, with two plug-in adapters so it could operate into stereo phono inputs designed for magnetic cartridges. Sonotone was attempting to compete in the high-fidelity field by then, with advantage over magnetic cartridges being immunity to hum and ruggedness. The Velocitone was sold only with the LP diamond/LP sapphire stylus and was designated 9TAF-D77V... 'V' for Velocitone. There was a Sonotone 9 Mark IV (1965); I couldn't see anything different about it from the 9TAFHC and mine came in a body still marked "9TAFHC." The last development in the line was the Sonotone 100T, also sold as Velocitone Mk V. It was supposed to be a further-refined version of the 9TAFHC Mark IV but I never saw or played one.

I put the 9TAF-S in a V-M record changer to upgrade a wooden-cabinet phonograph (warning: BROWN!) that my younger sisters had. The volume had to be turned up higher, because it replaced a VACO crystal cartridge, but the Sonotone tracked audibly better and sounded better through the phono's built-in eight-inch whizzer cone loudspeaker. As far as I know, that set still exists, probably in the same storage room where the aforementioned Dual 1009, Garrards, and Dynaco system reside. I remember that the 9TAF-SD with diamond LP stylus cost several dollars more than the 9TAF-S with sapphire; while a replacement diamond LP/sapphire 78 cost \$1.66 at Lafayette Radio. There was no audible difference among the styli and a quickie inspection with the toy microscope I had, showed the diamond tips to look just as good. So it was a no-brainer to save a couple of bucks by buying the cheap 9TAF-S and the Lafayette replacement stylus; and throw out the sapphire LP stylus.

My 9TAFHC-D77 (minus the Velocitone adapters, they weren't in the junk box I raided) is still here, in the "spare cartridges" box.

Silicone grease was first used in the mono Sonotones. The ceramic elements were clamped onto gold-plated contacts at the far end from the stylus and the grease was intended to damp resonances in those ceramic elements. I think it was still used in the 9 series; performance of the 9TAFHC Mark IV version seems to suggest a change in the damping to smooth out high frequency response, which by then went just about as high as competing magnetic cartridges. I wonder if instability in early silicones caused the material to break down or lose viscosity; or if yours was subjected to high temperatures, causing the silicone to break down.

The Sonotone 8 was, indeed, an adaptation of the Sonotone 3 mono cartridge design, with two ceramic elements mounted at 45-degree angles matching the stereo groove modulations, instead of a single one matching horizontal modulations.