

Chinese Vector Slide Rules

重对数 双面 矢量 计算尺

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Introduction

The Oughtred Society Slide Rule Reference Manual [1] has a section on collecting slide rules listing different types of collecting objectives one might pursue. A collection may take many different forms. It may be general with no particular theme, or it may be limited to the slide rules from a given manufacturer, or only consist of rules with specialized scales ... electronic, surveying, hyperbolic scales (Vectors), etc. The *Journal of the Oughtred Society*, Vol. 14, No. 1, 2005 has two articles that discuss types of specialized Vector slide rules: Slide Rules With Hyperbolic Functions [2], and On The Evolution Of K&E Vector Slide Rules [3]. This present article concentrates on the numerous Vectors produced in China from the late 1930s/early 1940s until the end of Chinese slide rule production in the 1980s. China developed more Vectors, at least 17 different models, than any other country. This article is an introduction to the construction, dating, models, factories, scales, gauge marks, and cursor lines of

Chinese Vectors. Only slide rules in the authors' collections will be discussed; however the scales, gauge marks, etc., for all known Chinese Vectors is given in Table 6⁶. The first part of our discussion will be a general overview of the time sequence of Chinese Vector production, their icons and a brief presentation of Chinese Vector slide rule text. The second part will present an in-depth discussion on the evolution of the various models.

Overview

The first Chinese slide rule factory, which was privately owned, was founded in 1931. The early slide rules were poorly made. A picture of the scales was glued to a wood body and slide. The Shanghai Sida Slide Rule Factory, also of private ownership, was founded in 1936 and possibly produced the first Vector, the paper on wood Vector shown in Figure 1. It is an exact copy of the K&E 4083-3 scale set 1 (1939/47). The end brackets are pressed aluminum and the cursor is fixed plastic. The earliest possible date of production is 1939; however, a date in the early 1940s isn't unreasonable.

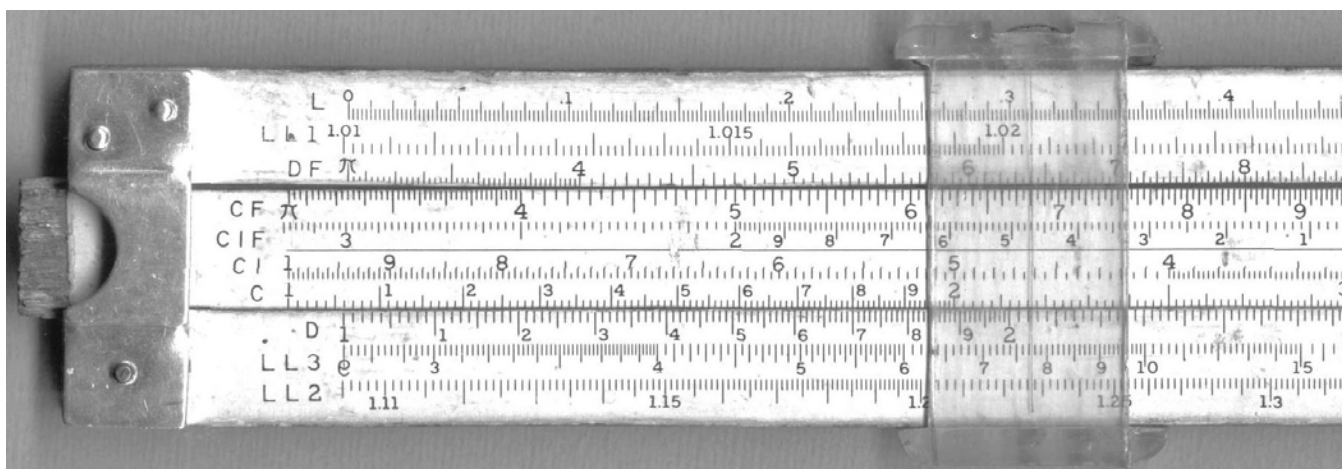


Figure 1. Chinese Sida paper-on-wood-construction using K&E scale 4083-3, scale set 1 (1939/47).

For ten years (1939-1949) there was a gradual improvement in the quality of Chinese slide rules. Laminated wood bodies with adjustable metal end brackets and metal-rimmed cursors replaced the paper on wood construction. In 1949 a major change took place. The Chinese revolution mandated that all private companies, including slide rule manufactures, become a Joint State Private Ownership (in Chinese this is called Gong Si He Ying). Slide rules such as the Gong Si He

Ying Ding Feng Instrument Factory models 5471 and 5810 and the Gong Si He Feng Shanghai Sida, 1083s, which also has a K&E 4083-3 scale set 1 (1939/47), are from this period. Table 1 gives the Chinese text on the box of the Gong Si He Ying Ding Feng 5471, together with an English translation (now you can translate our Chinese sub-title). Soon the Gong Si He Ying was left off product names, however the companies were still of Joint State Private Ownership until 1978.

⁶Table 6 is a JOS Plus feature of this article, where additional information is presented on our web site. Please visit the Oughtred Society web site www.oughtred.org to view this table of data for 39 Chinese vector slide rules.

Table 1. Chinese Text.
TEXT ON THE CASE OF THE GONG SI HE YING (JOINT STATE PRIVATE OWNERSHIP)
SHANGHAI DING FENG INSTRUMENT FACTORY 5471
(FROM LIU QINGLIN)



In 1954 many slide rule factories started using plastic bodies. However, Xue Shi 1572-K3, an exact copy of the K&E 4083-3 scale set 4 (1954/72), including the wood inlaid wood top and bottom edges, was obviously made in 1954 at the earliest, and may be among the last of the laminated wood body construction.

In 1958 a number of small slide rule factories merged into the Sida slide rule factory. These were Xuesh, Qiufan, Henong, Xinhe, Dingfeng, and other unknown names. Sida manufactured slide rules with the Sida name and Ruyi icon. The Sida name and its Ruyi icon, an S-shaped ornamental object symbolizing good luck, is shown in Figure 2.

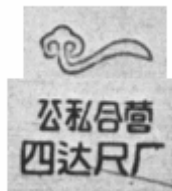


Figure 2. Shanghai Sida slide rule factory Ruyi icon and Sida text.

However, in 1966 the Sida name and Ruyi icon was dropped when Sida became the Shanghai Slide Rule Factory. For a while slide rules with no icon, only the Shanghai Slide Rule Factory name, were produced. The Flying Fish icon, Figure 3, was introduced in around 1968 and was used on all Shanghai Slide Rule Factory slide rules and slide rule cases until the end of their slide rule era in the 1980s.



Figure 3. Flying Fish 1003 icon and Shanghai slide rule factory text.

K&E was not the only Vector manufacturer that influenced Chinese designs. The Beijing Slide Rule Factory Haiou Pai, or Seagull Brand, 6513 has the same scale set as the Aristo 971, which was introduced in Europe in 1954. The Flying Fish 1018, Figure 4, which is only one of the three known slide rules with Gudermannian hyperbolic scale sets (the other two being the Hemmi 153 and Post 1461) was obviously influenced by the Hemmi 153, using the same scale nomenclature. *For Figure 4 see page 64.*

The following discussion focuses on the various Vector manufacturers, their models, and our best guess as to the sequential order of introduction.

Discussion

The first Chinese Vector, as discussed earlier, was the paper-on-wood slide rule shown in Figure 1. No manufacturer is known. However, as mentioned, the Shanghai Sida Slide Rule Factory is a reasonable guess. The pertinent attributes are listed in Table 2.

Table 2. Paper On Wood.

PAPER ON WOOD-POSSIBLY SHANGHAI SIDA SLIDE RULE FACTORY





SLIDE RULE	BODY CONSTRUCTION	END BRACKETS	CURSOR		ICON	CASE	COMMENTS
	PAPER ON WOOD	ADJ. METAL	FIXED PLASTIC	LINES	NONE	NONE	
NO #	√	√	√	0/0	√	√	K&E 4083-3 SCALE SET 1 (1939/47)

The Gong Si He Ying Shanghai Ding Feng Instrument Factory produced at least three Vectors as shown in Table 3 and labeled as A (Table 3 includes all the known factories that joined into the Shanghai/Sida Slide Rule Factory and illustrates the evolutionary development in Shanghai

from the mid/late 1940s until the end of slide rule production). Only the 5810, which has the K&E 4083-3 scale set 1 (1939/47), has the icon shown in Figure 5a; however, the case flaps of the others have it.

TABLE 3

SHANGHAI SLIDE RULE FACTORY VECTOR EVOLUTIONARY SEQUENCE

SLIDE RULE	CONSTRUCTION		END BRACKETS		CURSOR			ICON TRADE MARK				CASE		COMMENTS
	LAM. WOOD	PLASTIC	ADJ. METAL	FIXED PLASTIC	METAL FRAMED	NON FRAMED	LINES	RUYI 	NONE	FLYING FISH 	OTHER	CARD.	PLASTIC	
^A 5471	√		√		√		0/0		√			√		
^B 1083	√		√		√		0/0					√		K&E 4083-3 SCALE SET 1 (1939/47)
^B 1083	√		√		√		0/0	T				√		K&E 4083-3 SCALE SET 1 (1939/47)
^A 5810	√		√			√	0/0					√		ICON ON BOX FLAP OF ALL DENG FENG'S (A)
^A 5571	√		√			√	0/0		√			√		
^C 1002		√	√			√	1/1	B				√		
^C 1009		√	√			√	1/0	B					√	
^C 1015-1		√		√		√	2/0	S					√	
^D 1009		√		√		√	2/0		√				√	
^D 1200		√		√		√	2/0		√					POCKET
^E 1003		√		√		√	0/0			S				
^E 1015		√		√		√	2/0			S			√	
^E 1002		√		√		√	2/0			B				
^E 1004		√		√		√	2/0			B			√	
^E 1200		√		√		√	2/0			B			√	POCKET
^E 1018		√		√		√	0/2			B			√	GUDERMANNIAN

ICON LOCATION : T=TOP RAIL S=SLIDE
B=BOTTOM RAIL.

(A) GONG SI HE YING SHANGHAI DING FENG INSTRUMENT FACTORY.

(B) GONG SI HE YING SHANGHAI SIDA SLIDE RULE FACTORY.

(C) SHANGHAI SIDA SLIDE RULE FACTORY-RUYI ICON.

(D) SHANGHAI SIDA SLIDE RULE FACTORY-NO ICON.

(E) SHANGHAI SLIDE RULE FACTORY-FLYING FISH ICON.


Table 4. Xue Si.

XUE SHI-NO OTHER INFORMATION AVAILABLE

SLIDE RULE	BODY CONSTRUCTION	END BRACKETS	CURSOR		ICON	CASE	COMMENTS
	LAMINATED WOOD/ INLAYED WOOD TOP/BOTTOM	ADJ. METAL	NON FRAMED	LINES	NONE	CARDBOARD	
1572-K3	√	√	√	0/0	√	√	K&E 4083-3 SCALE SET 4 (1954/72)
?	√	√	√	0/0	√		K&E 4083-3 SCALE SET 4 (1954/72)

Table 5. Haiou Pai.

BEIJING SLIDE RULE FACTORY
ICON-HAIYOU PAI (SEAGULL BRAND)

SLIDE RULE	BODY CONSTRUCTION	END BRACKETS	CURSOR		ICON SEAGULL	CASE	COMMENT
	PLASTIC	ADJ. METAL	NON FRAMED	LINES		CARDBOARD	
6531	√	√	√	1/3	√	√	ARISTO 971 SCALE SET (1954)
6681	√	√	√	1/3	√		

The Gong Si He Ying Sida Slide Rule Factory produced the 1083, labeled B in table 3. This Vector also has the K&E 4083-3 scale set 1 (1939/47) and may be of similar date as the Ding Fengs. Two 1083s are listed in table 3. Both have the same scales, but with different icons, Figures 5b and 5c.



Figure 5. Gong Si He Ying Ding Feng Instrument Factory 5810 icon (a), Sida Factory early 1083 icon (b), and the later Ruyi icon and text (c).

On the Xue Shi we have no information as to factory name or location; 1572-K3 has the K&E 4083-3 scale set 4 (1954/72). The attributes of this laminated wood slide rule are given in Table 4. There are no identifying marks on this Vector, and the one labeled “?”, which has the same scales, may be a 1572-K3.



Figure 6. Beijing Haiou Pai, Seagull brand icon and text

The Beijing Slide Rule Factory Haiou Pai, or Seagull Brand, Figure 6, produced the 6531 and the 6681 Vectors. As noted earlier, the 6531 has the same scale set as

the 1954 Aristo 971, so a production date of the mid/late 1950s isn't unreasonable. Table 5 lists the Haiou Pai attributes.

As noted earlier, in 1958 several slide rule manufacturers merged. Table 3, C, D, and E shows the evolution from the Ruyi icon, no icon, and finally the Flying Fish icon, which was used until the end of China's slide rule era in the 1980s. It should be mentioned that, although they may have had different names, the slide rules with the same model number have the same scales.

Table 6⁷ is a listing of all known Chinese Vector slide rules. This includes additional names that were not discussed here. The list shows the scales, gauge marks, cursor lines, etc., for the slide rules in the authors' collections. Partial information is shown for other slide rules that are known to exist. This listing on the Oughtred Society website (www.oughtred.org) will be updated as new Chinese Vectors come to light.

If this article stimulates you to collect Chinese Vectors, please let the authors know of any information as to dates, models, factories, etc., not shown here that you come across.

Acknowledgements

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References

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- [2] Robinson, William K., "Slide Rules With Hyperbolic Functions", *Journal of the Oughtred Society*, 14:1, 2005, p55.
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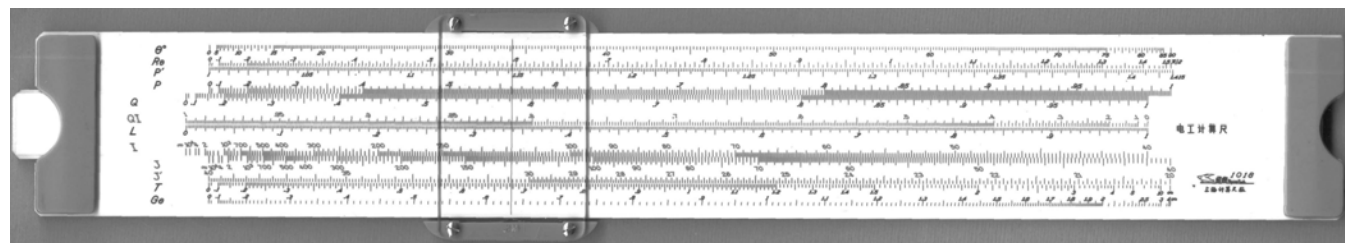


Figure 4. Flying Fish 1018 Gudermannian

⁷(A JOS Plus item. See Footnote 1, on page 61)