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Reinhold Walburg

A deposit of goddess plaques at Tissamahārāma – some preliminary considerations

Keywords: Ancient Ceylon; Tissamahārāma; 1st century BC; goddess plaques; monetary history; religious deposit

Abstract: During the 1996 excavation campaign at Tissamahārāma / Śrī Laṅkā a hoard of about 800 so-called goddess or Lakṣmī plaques were discovered inside a house erected on a brick-built fundament. There was no find receptacle but the items lay strewn loose on the earth covering an area of c. 50 × 40 cm. The specimens were exclusively of the very small size type, which is scarce compared to the normal plaques of double height. Such a large number of small specimens in one hoard are unique for the ancient Ceylonese *Fundlandschaft*. Due to their outer appearance and the metrological data it becomes, again, evident that these objects are religious tokens and not coins. Evaluating all available information, we probably have to think of ritual downpour(s).

The circumstances of discovery and the archaeological data

During the course of the 2006 campaign in Tissamahārāma the remains of a building were excavated (Fig. 1 a, b) which belonged to the structural phase c2, datable to the first century BC (Weisshaar 2007: 217–218); the exact find spot is marked with a large white X. The archaeological data point to a secular context; there are no hints that indicate a religiously motivated use of the building. The house in the residential area of noble families within the citadel was built at the same place and with the same alignment like two preceding burnt-down buildings; unlike these, constructed of tamped clay, it was erected on a brick-built fundament. Its threshold opens to the west to an open space (route way) within the citadel opposite the mound. No further conspicuous or even spectacular artefacts were discovered within the walls.

In a shallow cavity of c. 50 × 40 cm extension underneath the lowest walking level of the house, there lay about 800 religious tokens (exactly 784 specimens and 93 fragments) of the so-called goddess plaque type strewn loose on the earth. There were no traces of a find receptacle, neither mineral nor organic; and no orientation of the artefacts was observable that might point to storage in perishable materials.

The archaeological data are given in table 1.

Fig. 2 shows a series of photographs visualising the find spot and the stratigraphic sequence of the artefacts.

The cavity shows no symmetrical outline but looks like carelessly scratched out. Plaques and sherds found alongside did not lie strictly horizontally but partly were twisted; which seemingly hints to a downpour. There were some concentrations of pieces within the cavity observable; as well, the plaques did not build



a



b

Fig. 1. Place of discovery and exact find spot.

Trench 3 M, square 33/76, no. 145, on plane 20, + 20,96 (campaign 2006) in pit 146

Layer	north	east	level	#	commentary	seq. no.	
							found in 2006
on plane 20	40–50	55–65	20.97	145	1. layer	1	21.3.
on plane 20	40–50	55–65	20.97	145	1. layer	5	21.3.
on plane 20	40–50	55–65	20.96	145	2. layer	2	21.3.
on plane 20	40–50	55–65	20.96	145	2. layer	3	21.3.
20	40	60	20.09	145	3. layer	6	22.3.
20	?	?	21.04	146		4	24.3.
20	?	?	20.98	146		15	25.3.
20	26	54	21.02	145		8	25.3.
20	26	54	21.02	145		9	25.3.
20	26	54	21.02	145		10	25.3.
20	26	54	21.02	145		11	25.3.
20	26	54	21.02	145		12	25.3.
20	26	54	21.02	145		13	25.3.
20	26	54	21.02	145		14	25.3.
20	26	54	21.02	145		17	25.3.
20	26	54	21.02	145		18	25.3.
20	35	46	21.01	146		16	25.3.
20	10	44	20.95	145		7	27.3.
20	05	72	20.97	145		19	27.3.
20	05	72	20.97	145		20	27.3.
							found in 2007
21	12	44	20.78	146		21	21.3.

Tab. 1. The archaeological data.

a homogeneous packed bed but were interlaced with thin layers of earth. This may be due to the fact that handfuls of artefacts were thrown into the cavity sequentially. Owing to the multitude of the observed die-links and the thin layers of earth this must have happened within short intervals, perhaps in the rhythm of the plaques' manufacture.

Obviously, there was no lack of bronze in Tissamahārāma during this period. According to the excavator, the unearthed furnaces at the site "give proof to a busy craft area of the citadel with pre-industrial mass production" of

bronze artefacts (Weisshaar/Schenk/Wijeyapala 2001: 24). Therefore, the amassment of 871.84 g bronze seems to be a not too exciting phenomenon. However, almost one kilogram of bronze was to be paid for by other means or services, and of its 'real' material value we have not the slightest idea – not to mention the intangible value of the artefacts.

The iconography of the plaques

The obverse of the artefacts shows as main device a standing female figure. From this



Fig. 2. Specimens *in situ*. a 1st layer; b 2nd layer; c 3rd layer; d 4th layer; e lower part of the 4th layer of artefacts; f below the artefacts, uppermost layer of debris of the burnt house.

appearance they are neutrally called ‘goddess plaques’, their interpretative term is ‘Lakṣmī plaques’. The name-giving goddess, Lakṣmī, can be identified free of doubt only in those

cases where she is definitely depicted as Gaja Lakṣmī, i. e. with two attending elephants. In single cases the figure is shown with a halo or under an arch (Fig. 3).

Fig. 3. Figure with halo (left) and under an arch (right)¹.



From the Rāmāyaṇa (Sundara Kanda 7.14) we get the probably first written evidence of the goddess' representation as Gaja Lakṣmī, and in art the presumably earliest image corresponding approximately to that of the plaques is that from a relief of third century BC date at Sanchi in Madhya Pradesh, India (Sivaramamurti 1950: Pl. II B). Due to corrosion and/or careless manufacture, the two elephants often cannot be clearly seen but the entire composition of the lotus-holding figure seems to imply that in all cases here under discussion she certainly represents Gaja Lakṣmī; other than in the subsequent centuries where on the large plaques sometimes other standing (e. g. *nāgas*) and seated figures (Viṣṇu?) are present.

The reverse shows as dominant design a – when recognisable right-facing – large railed swastika. Besides its interpretation as a sun symbol its origin in India was supposed to be “a monogram or interlacing of the letters of the auspicious words *su asti* [*svasti*] in the Aśoka characters” (Monier-Williams 1899: 1283). This proposal makes it worthwhile to analyse the plaques not only figuratively but linguistically as well. The mentioned auspicious

Sanskrit words *sv-astī* have the meaning of “well-being, fortune, luck, success, prosperity” (Monier-Williams 1899: 1283). Turning to the obverse, the Sanskrit word *Lakṣmī* primary has the meaning “a mark, sign, token”, usually with a positive connotation: “a good sign, good fortune, prosperity, success, happiness . . . wealth, riches . . . beauty, loveliness, grace, charm, splendour, lustre”; likewise it is the “N.(ame) of the goddess of fortune and beauty” (Monier-Williams 1899: 892). Hence, obverse and reverse though different in form are identical in content; they form an entity. Summing up, these artefacts are *lakṣmaṇa*, “having marks or signs or characteristics . . .; endowed with auspicious signs or marks, lucky, fortunate” (Monier-Williams 1899: 892) – and this actually tightly. Taking into consideration the various accompanying symbols visible on the large plaques (Still 1907: 207; Codrington 1924: 27), a Hindu rather than a Buddhist background for the manufacture of these artefacts is conjecturable.

¹ Artefacts are generally reproduced enlarged and not to scale.

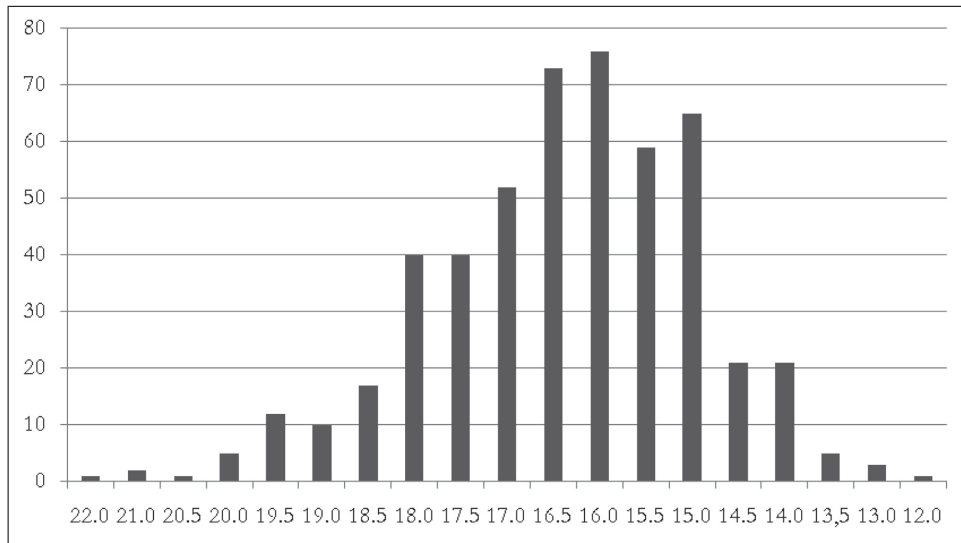


Fig. 4. Heights in mm.

Technical features of the specimens

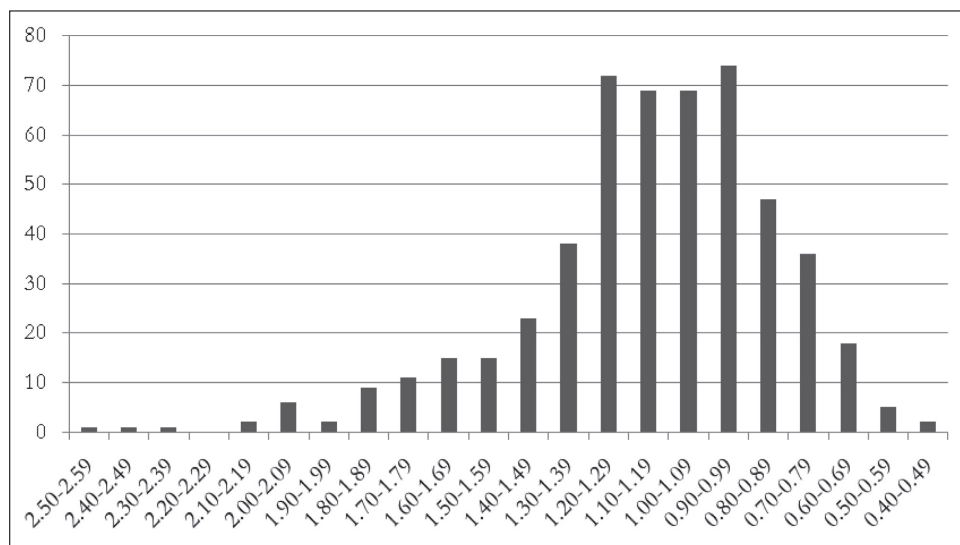
The pieces are exclusively of the small size type as can be seen in the following graph showing the heights of the measurable specimens; the subsequent graph shows the weights of the intact pieces; for the complete data see appendix.

Specimens of metrological relevance, i. e. completely preserved and not corroded, range in weight from 0.40 to 2.57 g. A rough estimate of the figures given in figure 5 shows that the bulk of pieces (575 ex.) scatter between 0.6 and 1.69 g, condense via 480 pieces between 0.7 and 1.39 to a concentration (335 ex.) between 0.9 and 1.29 g. Beyond the outer margins a rapid decline towards single specimens is recognisable. However, on its own these graphs cannot provide the answer to the question what was originally intended. We have to analyse whether the search for a possible interdependence between weights and sizes will procure a logical result. The diagram (Fig. 5) shows no significant peak for an intended normal weight. This again testifies that we are moving on nonmonetary terrain and thus are not forced to start immediately with the search for the intended normal weight of the plaques that would be a major factor in determining

the value, or purchasing power, of a means of payment. The graph showing the heights of the 386 precisely measurable plaques (Fig. 4), however, provides the hypothetical factor for analysis. The normal height of a plaque obviously should be one *āṅgula*, the 'breadth of a finger'; as a twelfth of a *vidatthi* (span) its length was about 17–18 mm². The ideal size is observable with 27.72% of the 386 pieces; added the 112 specimens that reach with 16 to 16.5 mm approximately the intended height we get 56.74% 'acceptable' pieces, supplemented by 95 (24.61%) examples of 15 to 15.5 mm. Pieces above 18 mm and under 15 mm are negligible outliers. The clearly visible size agglomeration does not correspond with a weight concentration. Without any significant peak(s), these weight values scatter over a range between 0.79 and 1.28 g and are represented by pieces of all sizes. In short: Larger pieces are not significantly heavier and small ones

² Rhys Davids 1877: §§ 25–26; Geiger 1960: § 73. In Mhv. XXVIII.14 "there appeared nuggets of gold of different sizes; the greatest measured a span, the least were of a finger's measure".

Fig. 5. Weights in g.



not significantly lighter, which means that a certain size was intended and not a certain weight. Intact large plaques of the same dating and from Tissamahārāma as well do confirm this observation: they are approximately twice as large as the small specimens, the weights being, however, as arbitrary as in the case of the small pieces³. These observations, again, strongly support the result of an earlier study about the nature of the plaques (Walburg 2008: ch. 3.2.1); they are not coins.

Prima vista, the specimens look like having been cast, sometimes in a most careless manner, so that many of them remind pieces of scrap. However, appearances are deceptive. In fact, the process of manufacture is like the one when minting coins; after casting the blanks these were struck with a pair of dies. Preservation of the artefacts is generally very good, often extremely fine; a number of plaques even are 'as struck'. Not a single specimen is in worn condition. Only schematic visible designs or parts of them result from weekly striking, not from circulation. This characteristic they share with the locally manufactured imitations of late Roman *æs* coins, produced in Rohaṇa more than half a millennium later (Walburg 2008: ch. 3.1.6). Quite a lot of specimens were halved (19 ex., Figs. 6 a, b) or bent (81 ex., Figs. 6 c, d)

sometime after their manufacture. This trait is also to be observed with pieces of larger size; the reasons for this violent treatment remain to be seen.

Remarkably, obverse and reverse designs show extremely different features (Figs. 6 e, f).

With hardly any exception, the artefacts have on their obverse a figure suitable to the size of the blank, i. e. normally the figure is depicted completely or almost completely (Fig. 6 e); apart from the fact that often the die and the blank do not share the ideal parallel axis. In these cases a minor or larger part of the diagonally placed figure is off-flan. The reverses, on the contrary, were frequently struck with dies that are much too large for the blanks; additionally, the orientation of the die-axis – more often than in the case of the obverses – is random (Fig. 6 f). This observation unequivocally proves that the fixed lower die, onto which the blank was more or less carefully placed, bore the obverse; while the free to handle upper die was engraved with the swastika design. It also evidences that the obverse was the more important side of the

³ 38,5 × 16,5 (6.26 g) – 36,5 × 17,5 (6.42 g) – 34,5 × 18 (2.86 g) – 32 × 16 (6.23 g) – 32 × 14 (1.97 g).



Fig. 6. Plaques from the Tissamahārāma deposit (1, b halved specimens; c, d bent specimens; e, f obverse und reverse of two different plaques).

artefacts and that the reverse was only of minor significance, if at all. Finally, it shows that – though not a single specimen is represented in the find – larger pieces existed⁴. We may presume that local die-engravers – like their ‘colleagues’ all over the world – soon had realised that the upper die, who received the hammer blows, cracked much earlier than the fixed lower die. Hence they choose the more difficult to engrave design for the lower and the simple linear design for the upper die. The frequent use of upper dies that are much too large seems to indicate that a certain amount of small pieces was to be produced within a short period of time. As there were not enough small upper dies to cope with that task, large ones had to be used as well.

The most striking feature of this complex is the multitude of die-links observable at the obverses; likewise, there are many almost identical specimens struck with dies that obviously were copied or transferred from one single pattern. Well struck and/or well preserved specimens – in total about two-thirds of the artefacts – were meticulously examined to reveal possible die-links; reverses were not studied due to their appearance just described. To avoid criticism, I would like to point to the fact that in case

⁴ Evidence for the existence of large specimens in Tissamahārāma in the 2nd century BC is now available from the results of excavations there; for the 1st century BC see Walburg 2008: ch. 4.2.3.

of these carelessly produced artefacts, die-links in almost all cases are recognisable only on enlarged digital photographs on the screen or on the originals. Printed photographs in the scale of 1:1 hardly show the correlations (Fig. 7). So, a disbeliever may study the originals in person in the Archaeological Department in Colombo; the discernible dies (indicated by symbols) and the number of pieces struck with these are as follows:

✚ 103 Ex. ■ 12 Ex. ● 11 Ex.
★ 4 Ex. ◆ 2 Ex. ○ 2 Ex.

Even well struck and/or well preserved specimens are seldom well centered. Thus in many cases only parts of the design are visible so that the intersection of two pieces often is very small; for this reason even more die identities are conjecturable.

For this phenomenon two explanations are conceivable: either the artefacts were manufactured locally, i. e. at Tissamahārāma, and had no chance to be dispersed, or they were imported as a complete lot from somewhere or other. In favour of supposing a local fabrication is the fact that some single specimens discovered during the course of the excavations at Tissamahārāma and contemporary to the collective find are interlinked with pieces from it.

Summing up, we can state that

- ▶ the plaques were struck, not cast
 - onto carelessly produced blanks
 - in a hasty, often careless way
 - within a short period of time
- ▶ deliberately, only minute specimens were produced
 - that had an intended size, not an intended normal weight
- ▶ a considerable number of examples later was ‘treated violently’
 - by bending
 - by halving

Other places of discovery

To evaluate the meaning of the present deposit – which is the largest of its kind ever found in the island – it should be helpful to compile a list of other collective findings of religious tokens of the small size as well as of the plaques in general⁵. No other collective finds of exclusively diminutive specimens are known.

Single finds of miniature plaques are reported from

- ▶ Tissamahārāma, second century BC (2 ex.), first century BC (12 ex.), first century AD (2 ex.), second century AD (1 ex.)
- ▶ Anurādhapura, second/first century BC (1 ex.), second century AD (14 ex.), third to sixth century AD (8 ex.)
- ▶ Kantarōḍai, many specimens of unknown dating

Hoardings of large size specimens are known from

- ▶ Mullaitivu, some 200 pieces and, in a second hoard, 16 specimens
- ▶ Chilaw, more than 91 pieces

Single finds are reported from Anurādhapura and from various places mainly in the coastal areas of the island (Walburg 2008: 90).

Interestingly, Sigiriya – a temporary royal residence from 478 to 496 – and Polonnaruwa – the capital, with some interruptions, from the reign of Aggabodhi VII (8th century), and conclusively from the beginning of the 11th century – produced not a single plaque, neither of small nor of large size. The most striking observation, however, is the confirmation of an already supposed chaining (Walburg 2008: 108, 110, 288, and note to complex no. 45.) of Tissamahārāma in the extreme south and Kantarōḍai in the extreme north by the accumulation of small pieces at both places and

⁵ For full details see Walburg 2008.



Fig. 7. Selected goddess plaques of the Tissamahārāma deposit Scale 1:1.

their identical physical features⁶. This is, however, not the place to elucidate the nature of a presumed relationship between the two localities; suffice is to say that both Tissamahārāma and Kantarōdai show a remarkably high number of the minute religious plaques.

Returning to the chronology of the small specimens and the plaques in general, we now by archaeological data get the following locally defined chronologies:

location	small specimens	large specimens
Tissamahārāma	2 nd c. BC – 2 nd c. AD	2 nd c. BC – 7 th c. AD
Anurādhapura	2 nd c. BC – c. 600 AD	2 nd c. BC – c. 600 AD
Sigiriya, 5 th c. AD	none	none
Polonnaruwa, from 8 th c. AD	none	none

The data indicate that in Tissamahārāma the small pieces terminated much earlier than in Anurādhapura, and that the manufacture of plaques in general ended sometime in the seventh to eighth century, definitely before the rise of Polonnaruwa. The dating of single specimens discovered in Tissamahārāma seemingly explains why our deposit consists of only small pieces. Chronologically, large and small plaques are distributed as follows:

size	2 nd c. BC	1 st c. BC	1 st c. AD	2 nd c. AD
small	2	12	2	1
large	3	13	42	62

Their reciprocal occurrence is obvious: In the two centuries BC small pieces prevail while in the two centuries AD large plaques clearly dominate; from the following centuries there are only large specimens known. However, compared with the c. 800 specimens of the deposit, the number of single found small plaques is remarkably meager. This seems to indicate that they were not in widespread use in people's daily life and that larger quantities were not produced for constant supply but merely event-driven. The numbers also imply that there had been a development from small

to large pieces; abandonment of the small and preference of the large plaques took place in the course of the first century BC. The steadily growing numbers for single finds points to a gradually increasing individual use of the artefacts which reached its climax in the second century AD; from the third century numbers progressively dwindle. We can be quite sure that the development observable in Tissamahārāma reflects that in the island in general as reliable archaeological data from Anurādhapura (see above) are in accordance with the just said – and more we currently do not have.

The interpretation of the Tissamahārāma collective find

From the various possibilities how this number of objects was amassed, the interpretation as a classical hoard can certainly be ruled out; the unworn state of the artefacts and the very great number of die identities contradict the supposition that the objects were collected successively over a longer period. The find spot, a secular house with no hint to a religious context forbids the explanation as a steadily growing offertory box. Perhaps, comparable phenomena from other centuries and regions may be helpful in interpreting the present feature. With a non-judgemental view we see a great number of small, unused artefacts which not only look similar but were produced with identical tools. These, however, are exactly the criteria that define ritual downpours or deposits; for Bronze Age Mesopotamia we have the statement: "I differentiate Streugaben from other deposits found in the same types of places by the following characteristics – the artifacts are generally tiny, repetitive in type, very numerous, spread over a wide area, and are often lying trodden into the topmost layer of a mud floor or into the interstices of a stone or baked-brick floor" (Bjorkman 1994: 8), and for the Celts

⁶ Those of Kantarōdai were described by Codrington 1924: 28.

it is presumed: “So legt etwa die Häufung stempelgleicher und prägefrischer Exemplare innerhalb eines Depots die Vermutung nahe, ihre Prägung sei eigens zum Zwecke der Theaurierung erfolgt . . . je mehr „Prestigeobjekte“ angehäuft werden, desto „angesehener“ ist deren Besitzer in der Gesellschaft . . .” (Nick 2006: 101) [An accumulation of die identical pieces fresh from the mint within a deposit suggests the assumption that they were struck especially for hoarding purposes . . . the more objects of prestige are accumulated the more esteemed is their owner in society . . .]. Combining the essential evidence of both these statements we get a description of our on-site over a wider area underneath the first stratum of a house; supported by additional observations: carelessly struck – laden with auspicious signs – often damaged or destroyed by halving and bending. Here, we must return to the technical features section. The observed halving and bending of the minute plaques were hitherto abundantly known only from the large specimens. In both groups the pieces were broken, not cut. Halving and bending indicate a kind of ‘treatment’ after the plaques had been struck. As these artefacts are not money or even coins, the production of fractions by this behaviour⁷

can be ruled out. The true meaning of this procedure, however, is still obscure.

Evaluating all available information, we probably have to think of ritual downpour(s); possibly comparable to “a religious rite preparatory to a sacrifice or any solemn observance (performed by scattering boiled rice on the ground and invoking blessings by the repetition of certain Mantras; . . .)” (Monier-Williams 1899: s. v. *sv-astī vācana*). Possibly, the destruction of the plaques was part of a, probably Hindu, ritual. It might be of importance or just a mere coincidence, that during the reign of King Vaṭṭagāmaṇi (who ruled the country for only five months in 43 BC) a young Brāhmaṇa “became a rebel, and his following waxed great”. (Mhv. XXXIII.38); and this trouble arose just from the royal place of refuge in the south – Tissamahārāma. Subsequent to this event we recognise a Damiḷa suzerainty of fifteen years. Is our deposit a hint to this strong brahmanical community first mentioned and its further development during the following one and a half decades?

As this is, however, the first discovery of such a kind, the interpretations given are merely working hypotheses; and the odds are fifty-fifty for verification or falsification.

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⁷ Proposed by Bopearachchi / Wickremesinhe 1999: nos. H 77–83, and disproved in Walburg 2008: ch. 3.2.1, esp. p. 88.

Figure credits

1, 2 H. P. Wittersheim; 3–7 R. Walburg.

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Appendix

Technical features of the specimens.

Figures in *italic* denote that these artefacts do not provide exact data concerning size and/or weight (bent, halved, missing parts). The pieces are arranged according to the sequence of their recovery.

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
1.1	●	x			↖			22 × 9.5	2.01	
1.2	●	x						16 × 8	1.13	
1.3			x		↗			16.5 × 7.5	1.23	
1.4	■	x				↗		15.5 × 9	0.83	
1.5				x				16.5 × 8.5	0.75	
1.6	+		x					16.5 × 7	0.98	
1.7	+			x	↗			16.5 × 8.5	1.01	
1.8	■			x				17.5 × 7	0.77	
1.9		x						15.5 × 7	0.88	
1.10			x					16 × 8.5	1.28	
1.11		x						15.5 × 9.5	1.23	
1.12	●			x				15.5 × 8	0.87	
1.13	+		x					15.5 × 6.5	1.03	
1.14	*	x						16 × 7.5	0.82	
1.15			x					16 × 8	1.36	
1.16		x				↗		17.5 × 9.5	1.05	
1.17				x			x	17 × 9.5	1.22	
1.18	+	x			↖	↗		13 × 8.5	0.72	
1.19	◆		x		↖		x	10.5 × 7.5	0.52	
1.20				x			x	11 × 8.5	0.67	
1.21		x					x	11.5 × 8	0.52	
1.22			x				x	11.5 × 7	0.72	
1.23	+	x					x	11 × 8.5	0.76	
1.24				x			x	10.5 × 8	0.79	
1.25			x				x	12 × 8	0.52	
1.26	+			x				13 × 7.5	0.40	
1.27	+	x						10 × 9	0.40	
1.28				x				12.5 × 9	1.18	
1.29	*			x				10.5 × 7	0.61	
1.30	+			x				8 × 7	0.72	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
1.31				×					10 × 7	0.82
1.32				×					10 × 8	0.64
1.33				×					9.5 × 8	0.43
1.34				×					9 × 7	0.43
1.35				×					10 × 7	0.62
2.1		×							19 × 8.5	1.79
2.2			×				×		17 × 8	1.52
2.3	+		×						16.5 × 8.5	1.42
2.4	+		×						15 × 11	1.27
2.5	+		×						18 × 8	1.18
2.6	+	×							17 × 7.5	1.21
2.7				×		↗			16.5 × 7.5	1.40
2.8	■	×							18 × 7	1.40
2.9	+	×			↖	↗			16.5 × 8	1.21
2.10	+	×					×		16 × 7.5	1.15
2.11	+	×							16.5 × 7	0.99
2.12	+		×						15 × 7.5	1.17
2.13			×			↗			15.5 × 7	1.24
2.14	+		×						14 × 8	0.73
2.15			×						16 × 7	0.62
2.16			×						16.5 × 7.5	0.93
2.17			×						18 × 8.5	1.48
2.18				×					15 × 7.5	1.28
2.19				×					16.5 × 7	0.92
2.20			×			↗			18 × 7.5	1.64
2.21		×					×		15.5 × 9	1.88
2.22		×							17 × 8.5	1.16
2.23				×		↗	×		14.5 × 6.5	1.33
2.24				×			×		15 × 7	0.87
2.25				×					17.5 × 8.5	1.70
2.26				×			×		16.5 × 8	0.99
2.27		×							16.5 × 7.5	0.96
2.28				×					17 × 7.5	1.11
2.29				×					18 × 7.5	1.00
2.30		×							16 × 7.5	1.32
2.31				×					16.5 × 8.5	1.10
2.32	■			×				×	10 × 8.5	0.46
2.33				×				×	10 × 8.5	0.61

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
2.34				×	↖			13.5 × 7	0.68	
2.35				×				12 × 7	0.53	
2.36				×	↖			16.5 × 8.5	0.72	
2.37				×		↗		17 × 8	0.82	
2.38		×						14.5 × 8.5	0.91	
2.39				×			×	10 × 7	0.52	
2.40				×			×	7.7 × 8	0.46	
2.41				×				10 × 6.5	0.83	
3.1	+		×					14.5 × 7	1.25	
3.2	+		×					18 × 9.5	1.43	
3.3	+			×				14 × 7.5	1.24	
3.4			×					17 × 8.5	1.17	
3.5				×				17 × 9.5	1.82	
3.6			×					16 × 7.5	1.23	
3.7	●			×				15.5 × 7	0.95	
3.8				×				16 × 7	1.22	
3.9	+			×	↗		×	16.5 × 7.5	0.93	
3.10			×					18.5 × 8.5	1.67	
3.11	+			×	↖		×	15 × 6.5	1.18	
3.12				×	↖			15.5 × 9.5	1.22	
3.13			×					17 × 7	1.00	
3.14				×	↖		×	15.5 × 7	1.29	
3.15	+			×				16.5 × 7.5	0.99	
3.16	■		×		↖	↗		15.5 × 8	0.80	
3.17	+	×			↗	↖		17.5 × 8	1.12	
3.18				×				16.0 × 8.5	0.95	
3.19				×			×	18.0 × 8.5	1.15	
3.20	■	×			↗	↖	×	16.5 × 9	1.28	
3.21			×					17.5 × 10.5	1.20	
3.22		×					×	18 × 8	1.21	
3.23				×				18 × 7.5	0.98	
3.24		×						18 × 8.5	1.18	
3.25				×				16 × 7	1.46	
3.26			×					17.5 × 7	1.37	
3.27		×						18 × 7	1.03	
3.28				×				11.5 × 6.5	0.52	
3.29			×				×	8 × 7.5	0.33	
3.30				×				20 × 6	1.57	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
3.31				×				-----	0.87	
3.32				×			×	9 × 7	0.36	
4.1	+	×						17.5 × 8	1.12	
4.2	+	×			↖	↗		14 × 8	0.94	
4.3	+			×	↗			16 × 7.5	0.87	
4.4	+		×					15.5 × 8	0.90	
4.5	+		×					14 × 8	1.08	
4.6	+	×						16 × 8.5	1.16	
4.7	+		×					14.5 × 6.5	0.67	
4.8			×		↗			16 × 8.5	1.24	
4.9	+		×					13.5 × 7.5	0.74	
4.10		×						16.5 × 8.5	0.97	
4.11	+			×				16.5 × 8.5	1.26	
4.12				×	↗			16.5 × 7.7	0.92	
4.13				×	↖			14.5 × 8	1.00	
4.14			×					17 × 8	1.30	
4.15		×						16.5 × 8.5	0.76	
4.16	+		×		↖	↗		15.5 × 7.5	1.01	
4.17		×				↗	×	17.5 × 8	1.15	
4.18				×				16.5 × 8.5	1.28	
4.19	+	×			↗	↖	×	19.5 × 8	0.99	
4.20				×				15.5 × 8.5	1.12	
4.21				×			×	14.5 × 8	0.93	
4.22	+			×				16 × 6	0.79	
4.23		×						15.5 × 7	1.00	
4.24				×				16.5 × 8	1.04	
4.25				×				15 × 8.5	0.68	
4.26	+			×			×	8.5 × 7	0.19	
4.27				×			×	9.5 × 7	0.35	
4.28		×					×	12 × 9.5	0.55	
4.29				×			×	11 × 8	0.52	
4.30				×				10.5 × 7	0.34	
5.1	+		×					16 × 8	1.03	
5.2	+	×						15 × 7	0.59	
5.3	●		×					16.5 × 8	1.29	
5.4		×			↗	↗		16.5 × 9.5	1.24	
5.5		×			↗	↖		14.5 × 7	0.71	
5.6	+		×		↖	↗		16.5 × 8.5	1.15	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
5.7			×		↗		×		16.5 × 7	0.87
5.8		×							16.5 × 8	0.79
5.9				×					14 × 8	0.65
5.10				×	↗				19.5 × 7.5	1.69
5.11		×							16 × 10	1.07
5.12			×						16.5 × 7.5	1.21
5.13			×			↗	×		16 × 8	1.17
5.14		×					×		17 × 5.5	0.74
5.15			×						15 × 8	0.99
5.16			×		↗	↖	×		18 × 7	1.19
5.17				×					17 × 9	1.03
5.18		×							18.5 × 7	0.65
5.19		×					×		15 × 8.5	1.16
5.20				×	↗				15 × 7	0.66
5.21			×				×		16.5 × 8	0.73
5.22				×					15.5 × 8.5	1.25
5.23				×					17 × 9.5	1.17
5.24			×						17 × 6.5	1.13
5.25				×					15.5 × 7.5	1.16
5.26		×							18 × 9	1.49
5.27				×					7 × 7	0.15
6.1				×	↖				18 × 7.5	1.27
6.2		×							17.5 × 8.5	2.12
6.3	■		×						16 × 10.5	1.21
6.4	●			×					15.5 × 7.5	1.40
6.5				×					16.5 × 7.5	1.29
6.6	+	×							15.5 × 7	1.46
6.7				×					16 × 8	1.12
6.8		×							14.5 × 8	1.62
6.9	■	×							17 × 6.5	1.04
6.10			×						18.5 × 9.5	2.06
6.11		×							18.5 × 11	2.57
6.12	+		×						14.5 × 8	1.06
6.13		×					×		14.5 × 6.5	0.80
6.14		×					×		18 × 8.5	1.64
6.15	+	×							15 × 7.5	1.09
6.16		×				↖	×		15.5 × 7.5	0.91
6.17			×						17.5 × 6.5	1.17

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
6.18		×						15 × 8	1.11	
6.19	+	×						15.5 × 7	0.95	
6.20		×						15 × 7.5	1.16	
6.21		×						16.5 × 8.5	1.08	
6.22				×			×	14 × 7	0.91	
6.23				×			×	16.5 × 8.5	1.76	
6.24			×					17 × 8	1.45	
6.25		×						-----	1.39	
6.26		×						14 × 8	1.17	
6.27	+	×						13.5 × 8.5	0.79	
6.28			×			↗		14 × 10	1.43	
6.29			×		↗			18 × 8	1.51	
6.30				×				16 × 9	1.62	
6.31		×						17.5 × 11	1.59	
6.32				×				16.5 × 8	0.93	
6.33		×			↗			18 × 7.5	1.45	
6.34				×				17 × 10.5	1.45	
6.35				×				12 × 10.5	0.97	
7.1		×						18 × 7	1.00	
7.2	●	×						16 × 7	0.95	
7.3		×						16 × 8	1.03	
7.4	+		×		↖			16 × 8.5	1.34	
7.5	+		×					16 × 8	1.15	
7.6	+		×					14 × 8.5	1.41	
7.7	+		×					15 × 7.5	1.07	
7.8			×		↖		×	18 × 7.5	2.05	
7.9		×					×	15.5 × 6.5	0.74	
7.10		×					×	15 × 8.5	1.23	
7.11				×	↖		×	15 × 8	0.98	
7.12	+		×					15.5 × 7.5	0.79	
7.13	●	×						19 × 7.5	1.21	
7.14		×						18 × 7	0.99	
7.15	+	×						16 × 7.5	0.86	
7.16			×					17.5 × 7	1.51	
7.17				×				18 × 10	1.32	
7.18				×				19.5 × 9.5	1.71	
7.19				×				15 × 7.5	1.04	
7.20			×					14 × 8	0.62	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
7.21			×					15 × 7	1.06	
7.22			×			↗		17.5 × 10	1.23	
7.23				×				19.5 × 6	0.93	
7.24				×				16 × 8.5	1.32	
7.25			×		↗			16.5 × 9.5	1.47	
7.26				×				17 × 8	1.19	
7.27				×			×	14.5 × 9	1.23	
7.28				×			×	17.5 × 6.5	0.80	
7.29				×				17 × 9	1.89	
7.30				×				17 × 7.5	1.02	
7.31			×					18 × 7	1.46	
7.32				×				15 × 8	1.17	
7.33				×				15.5 × 7.5	1.36	
7.34				×				16.5 × 9	0.97	
7.35				×				14 × 6.5	1.21	
7.36				×				12 × 8	0.89	
7.37				×				12 × 7.5	0.74	
7.38				×				15 × 8.5	0.62	
7.39				×				16 × 9	0.97	
7.40				×				18 × 5	0.97	
7.41				×	↗			13.5 × 6	0.61	
7.42				×				09.5 × 9	0.41	
7.43				×				12 × 7	0.84	
7.44				×				17 × 8	0.96	
7.45				×				20 × 5.5	0.84	
7.46				×				17 × 8.5	1.28	
7.47				×				17.5 × 9	1.70	
7.48				×				17.5 × 7.5	0.65	
7.49				×				18.5 × 7.5	1.67	
7.50		×						-----	0.96	
7.51			×					-----	1.08	
7.52		×						15 × 8	1.13	
7.53				×				-----	1.90	
7.54				×				-----	1.03	
8.1		×					×	16 × 8.5	1.31	
8.2			×					16 × 8	1.69	
8.3			×					13 × 8	0.96	
8.4	+	×			↗			17.5 × 8.5	1.18	

no.	obv. dies	obv. to rev.			obv. die-axis given when not ↑	rev. die-axis given when not ↑	bent	halved	mm	g
		↑	↓	?						
8.5			×					17.5 × 9.5	1.58	
8.6				×	↗			16.5 × 8	1.52	
8.7			×					17 × 8.5	1.15	
8.8			×					16 × 8.5	1.27	
8.9				×			×	17 × 7	1.18	
8.10		×						18.5 × 10	2.08	
8.11		×						17 × 9	1.20	
8.12	+			×				16.5 × 7	1.25	
8.13				×				20 × 9.5	1.74	
8.14		×					×	17 × 8	1.61	
8.15				×			×	16.5 × 7	1.60	
8.16		×						19 × 9.5	1.20	
8.17	+	×					×	14 × 7	1.08	
8.18		×						15 × 8.5	0.99	
8.19		×				↗		17 × 8	1.31	
8.20	●	×				↗		15.5 × 9	1.49	
8.21	■		×		↗	↖		15 × 8	0.90	
8.22		×						16 × 7.5	1.07	
8.23		×					×	18.5 × 8	0.73	
8.24				×			×	15.5 × 6	0.90	
8.25	+	×			↗		×	14.5 × 9	0.99	
8.26		×				↗	×	15 × 7.5	0.96	
8.27			×					16 × 8.5	0.93	
8.28				×				16 × 7.5	0.81	
8.29				×				16 × 9.5	1.19	
8.30			×		↗	↖		13.5 × 7.5	0.67	
8.31		×						17 × 9	1.64	
8.32				×				17.5 × 8	1.73	
8.33				×			×	18 × 7.5	0.90	
8.34				×				18.5 × 9.5	1.54	
8.35	+	×			↖			16.5 × 6.5	0.99	
8.36			×					16 × 8	1.42	
8.37				×				18 × 9.5	0.78	
8.38				×			×	9.5 × 8	0.48	
8.39		×						10.5 × 6.5	0.43	
8.40				×				8.0 × 7	0.34	
8.41				×				-----	1.13	
8.42				×				-----	0.72	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
9.1			×					15.0 × 7.5	0.85	
9.2		×						16.5 × 9.5	1.11	
9.3	+	×			↖			16.5 × 6.5	0.92	
9.4	+	×				↖		15.5 × 9	1.11	
9.5	+			×	↗			17 × 8	1.20	
9.6	+	×			↗	↗		14 × 9	1.20	
9.7				×			×	14.5 × 7	1.15	
9.8			×		↗			14.5 × 7	1.19	
9.9			×			↗		16 × 8.5	1.32	
9.10				×	↖			17 × 8	1.26	
9.11	◆	×					×	17.5 × 9.5	1.50	
9.12	■		×			↗	×	16.5 × 7.5	1.35	
9.13		×						16 × 9	0.89	
9.14		×					×	16 × 7	0.85	
9.15		×						16.5 × 7	1.39	
9.16		×						15 × 8.5	1.13	
9.17		×						17.5 × 7	0.79	
9.18		×						16 × 7.5	1.34	
9.19		×						14 × 6.5	0.87	
9.20				×				18 × 7.5	1.00	
9.21				×				16.5 × 8	1.12	
9.22			×					17.5 × 9	1.13	
9.23			×				×	15.5 × 8.5	0.89	
9.24				×				15.5 × 9.5	1.27	
9.25				×			×	16 × 7.5	0.88	
9.26	+			×				9.5 × 9	0.35	
9.27				×	↖			14 × 9.5	1.15	
9.28		×						16 × 8.5	1.27	
9.29				×				13 × 7	0.71	
9.30				×				16 × 6.5	1.39	
9.31			×				×	15 × 7	0.92	
9.32				×				14 × 8.5	1.52	
9.33				×			×	12.5 × 7.5	0.48	
9.34				×				21 × 8.5	1.50	
9.35				×	↖		×	18.5 × 8.5	0.98	
9.36				×			×	16 × 8	1.31	
9.37				×				-----	0.54	
10.1		×					×	19.5 × 9	1.33	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
10.2	+	×					×		17 × 9.5	1.51
10.3			×		↗	↖			14.5 × 7	1.25
10.4				×	↗				16.5 × 11.5	1.19
10.5	+		×				×		14.5 × 8	1.07
10.6			×		↖				16.5 × 7	0.95
10.7		×				↗	×		15.5 × 9.5	1.14
10.8		×							16 × 9	0.88
10.9			×				×		17 × 10	1.22
10.10		×							16.5 × 8	1.46
10.11		×					×		16 × 7	0.85
10.12		×			↖				16 × 7.5	0.79
10.13		×							16.5 × 6.5	1.07
10.14				×					14 × 7	0.64
10.15		×							17 × 5.5	0.93
10.16			×		↖				15.5 × 10	0.72
10.17				×	↗		×		19.5 × 8.5	1.37
10.18		×							17.5 × 9	1.19
10.19			×						16.5 × 8.5	0.78
10.20			×			↗			20.5 × 10	2.84
10.21		×					×		19.5 × 8.5	1.38
10.22				×					15 × 8.5	0.79
10.23				×					18 × 7.5	1.28
10.24			×						13.5 × 7.5	1.20
10.25				×			×		18 × 9	1.14
10.26				×					15.5 × 8	1.37
10.27				×					16 × 7.5	0.98
10.28				×			×		15.5 × 8.5	1.15
10.29				×					17 × 8	1.15
10.30				×	↗				15 × 8	0.89
10.31		×							15.5 × 7	0.89
10.32		×					×		15.5 × 8	0.77
10.33		×					×		18.5 × 7.5	0.73
10.34				×					14.5 × 8.5	0.98
10.35				×					15 × 7.5	0.89
10.36			×						19 × 8.5	1.45
10.37				×			×		17 × 8	1.82
10.38				×			×		11 × 7	0.68
10.39				×					16 × 8	1.17

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
10.40				×					19.5 × 6	1.23
11.1	+	×							15 × 9	0.85
11.2		×			↗				15.5 × 7	0.88
11.3		×							15.5 × 7	1.05
11.4				×			×		19 × 9.5	1.23
11.5		×					×		18.5 × 8.5	1.60
11.6		×				↖			20 × 7	0.86
11.7		×			↗	↖			15.5 × 7.5	1.17
11.8			×		↗	↖			15 × 7	1.00
11.9	+			×					15 × 7.5	1.00
11.10	+	×			↖	↗			14.5 × 7	0.74
11.11	●			×	↗				16 × 7.5	1.31
11.12		×							17.5 × 7.5	0.80
11.13			×						16.5 × 7.5	0.98
11.14		×			↖	↗	×		15 × 8	0.97
11.15			×			↗			16 × 8	1.51
11.16		×			↗	↖			14 × 8	0.97
11.17		×							17.5 × 6	0.83
11.18		×					×		16 × 7	0.98
11.19			×						16.5 × 8.5	0.79
11.20		×			↖	↗			15.5 × 9.5	1.10
11.21			×			↗			15 × 7	0.79
11.22				×	↗		×		20 × 7	1.49
11.23				×					16 × 8.5	1.05
11.24		×							17 × 6.5	0.55
11.25				×					17.5 × 8	1.33
11.26			×				×		15.5 × 7.5	1.07
11.27				×					16.5 × 7	1.80
11.28				×					17 × 7.5	1.38
11.29		×							17 × 8.5	1.34
11.30				×					15 × 7	0.80
11.31			×				×		15.5 × 7.5	1.00
11.32		×					×		16.5 × 7.5	1.06
11.33	■	×							15.5 × 6.5	0.85
11.34				×			×		16 × 9	1.24
11.35				×					19.5 × 7.5	1.60
11.36				×					13 × 8.5	0.70
11.37				×					17 × 7	1.20

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
11.38				×			×		18.5 × 8.5	1.98
11.39	+		×			↖			12.5 × 8.5	0.91
11.40				×					18 × 7.5	0.79
11.41				×	↗				16 × 8	1.04
11.42	+			×					8.5 × 8.5	0.33
11.43			×		↖	↗			16 × 7	0.87
11.44				×					-----	2.33
11.45				×	↖				14.5 × 7.5	0.80
11.46				×					19 × 7.5	1.05
11.47				×					16.5 × 8	0.94
11.48				×					17.5 × 12	0.97
12.1	+	×				↗	×		16 × 9	1.45
12.2			×			↗			16.5 × 9.5	1.08
12.3	+		×						14 × 7.5	0.93
12.4			×				×		15 × 7	1.35
12.5	+	×			↗	↖			16 × 9.5	1.09
12.6	+			×	↖		×		18 × 8.5	1.17
12.7			×		↖	↗	×		15 × 7.5	0.95
12.8			×			↗			15 × 8	0.89
12.9	+		×		↖	↗			15.5 × 7	1.05
12.10		×				↗			18.5 × 11.5	1.88
12.11				×	↖				18 × 8	1.05
12.12		×			↗	↖	×		18.5 × 8.5	1.29
12.13		×				↖			15 × 7	0.94
12.14				×					19.5 × 7	1.17
12.15			×				×		15 × 9	1.34
12.16			×						17 × 7.5	0.88
12.17				×			×		14.5 × 8	0.95
12.18				×	↗		×		13.5 × 8.5	0.93
12.19		×					×		15 × 6.5	0.83
12.20			×						18 × 8.5	1.03
12.21				×			×		16 × 8	1.38
12.22			×		↖	↗			16.5 × 8.5	1.30
12.23				×	↗				17.5 × 8	1.96
12.24				×		↗	×		19 × 8.5	1.36
12.25			×						15 × 6.5	1.26
12.26			×						17.5 × 9	1.53
12.27		×				↗			16.5 × 8.5	2.21

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
12.28			×					14.5 × 6.5	1.13	
12.29			×		↖	↗	×	15.5 × 7	1.09	
12.30		×					×	16.5 × 7.5	1.18	
12.31			×		↖	↗	×	16 × 10	1.09	
12.32				×			×	17 × 7.5	1.22	
12.33				×				16 × 8.5	1.20	
12.34				×			×	15 × 8	1.48	
12.35				×				20 × 8	1.14	
12.36				×				17 × 8	1.05	
12.37				×			×	16.5 × 9.5	1.15	
12.38		×					×	16.5 × 7	0.63	
12.39				×	↖		×	16 × 8.5	1.16	
12.40				×				18.5 × 7	1.69	
12.41				×			×	16 × 8.5	1.92	
12.42				×				15 × 11	1.15	
12.43				×	↗		×	15.5 × 9	1.16	
12.44				×				10.5 × 8	0.50	
12.45				×			×	15 × 7.5	1.04	
12.46				×				14.5 × 9.5	0.95	
13.1	+	×						16 × 8	0.96	
13.2		×			↗	↖		18 × 9	1.72	
13.3	+		×		↗	↖	×	17.5 × 8	1.41	
13.4	+	×					×	15.5 × 7.5	0.91	
13.5	+		×		↗	↗		16.5 × 7.5	1.56	
13.6		×			↖	↗		14.5 × 6.5	0.85	
13.7		×						15 × 8	1.13	
13.8		×					×	18 × 8.5	2.03	
13.9		×						15.5 × 7	1.05	
13.10			×		↗			16 × 8.5	1.14	
13.11		×						15 × 7	1.12	
13.12				×				16 × 8	1.66	
13.13		×						17.5 × 6.5	0.65	
13.14	*		×					15 × 9	1.47	
13.15				×	↗			14.5 × 8	1.01	
13.16				×				16 × 8.5	1.13	
13.17		×					×	17 × 6	0.78	
13.18			×					17.5 × 8	1.22	
13.19	⊙	×				↗	×	14.5 × 7	0.58	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
13.20			×		↗			17 × 9	1.59	
13.21				×				15.5 × 8	1.80	
13.22		×			↗	×		19 × 9	1.51	
13.23				×				19.5 × 6.5	1.28	
13.24		×				↗	×	15.5 × 7.5	0.82	
13.25			×		↖	↗		15 × 10	0.94	
13.26		×				↗	×	16.5 × 8	0.93	
13.27				×				15.5 × 9	1.11	
13.28				×			×	16 × 8	1.35	
13.29			×					17 × 8.5	1.71	
13.30				×				16.5 × 7	0.95	
13.31		×					×	17 × 8	1.16	
13.32				×				17.5 × 8	1.65	
13.33			×				×	18 × 8	0.83	
13.34		×			↗	↗		16 × 8.5	1.45	
13.35				×			×	18 × 7.5	0.96	
13.36			×				×	15 × 7.5	1.06	
13.37			×		↖			15.5 × 8	0.95	
13.38				×	↗			14.5 × 9	0.93	
13.39				×	↖			17.5 × 9	1.65	
13.40				×			×	17 × 8.5	1.87	
13.41				×				15.5 × 9.5	1.15	
13.42				×				16 × 9.5	0.83	
13.43				×				18 × 13	1.26	
13.44				×				16 × 8.5	1.13	
13.45				×				13 × 9	0.99	
13.46				×				12 × 8.5	1.23	
13.47				×			×	14.5 × 8	1.10	
13.48				×			×	17 × 9.5	1.50	
14.1	+	×			↖		×	16 × 8.5	1.08	
14.2	+	×					×	16.5 × 7	1.09	
14.3	●		×		↗			19.5 × 9	1.35	
14.4	+	×			↗	↖		15 × 6.5	1.07	
14.5	+			×	↖			14 × 7.5	0.48	
14.6	+		×					15 × 7	0.62	
14.7		×			↗	↖	×	15 × 7.5	0.68	
14.8		×						12.5 × 7	0.56	
14.9			×					15 × 9	0.91	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
14.10				×	↖			16 × 8	1.37	
14.11			×			×		16 × 6.5	0.71	
14.12		×				×		14 × 7	0.85	
14.13			×			×		16 × 8	1.52	
14.14		×			↗	×		19 × 8	1.48	
14.15	+	×			↖	↗		15.5 × 9	1.18	
14.16			×					17.5 × 7.5	1.10	
14.17			×					19.5 × 8.5	1.56	
14.18		×			↖	↗	×	15.5 × 8	0.74	
14.19		×			↗	×		16.5 × 6.5	0.75	
14.20				×				17 × 7	1.19	
14.21	⊙			×		×		16 × 7.5	1.07	
14.22		×						14 × 8	0.60	
14.23		×				×		17.5 × 7	1.16	
14.24		×						15.5 × 7	0.73	
14.25		×						16 × 8	1.13	
14.26				×	↖	×		14.5 × 7	0.73	
14.27			×					14 × 8	0.97	
14.28				×				18 × 7	0.93	
14.29				×				16.5 × 8	1.46	
14.30				×		×		17 × 7.5	0.76	
14.31		×				×		18 × 8.5	1.61	
14.32				×		×		20.5 × 8	1.26	
14.33				×		×		16 × 8.5	1.52	
14.34				×		×		17 × 8	1.13	
14.35		×				×	↗	17.5 × 8.5	1.37	
14.36				×		×		16.5 × 7.5	0.77	
14.37			×			×		17.5 × 8	1.59	
14.38				×	↗			15 × 8.5	0.98	
14.39		×			↖			15.5 × 10	1.52	
14.40				×		×		14.5 × 6	0.80	
14.41				×				18.5 × 8.5	1.73	
14.42				×		×	↖	15.5 × 9	1.45	
14.43				×		×		20 × 10.5	2.40	
14.44				×	↖			12 × 8	0.66	
14.45				×		×		19.5 × 6	0.99	
14.46				×		×		17 × 7	1.39	
14.47			×			↗		14.5 × 8.5	0.61	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
15.1		×						18 × 7	1.20	
15.2			×				×	17.5 × 7.5	0.79	
15.3	+		×				×	17.5 × 7.5	1.03	
15.4				×			×	14 × 7.5	0.90	
15.5		×					×	17 × 9	1.23	
15.6		×						16 × 9.5	1.05	
15.7			×				×	16.5 × 7	0.66	
15.8			×					18 × 6.5	1.15	
15.9		×			↗	↖	×	15 × 8.5	0.95	
15.10	+	×			↖	↗		18 × 8	1.22	
15.11				×			×	15 × 7	0.95	
15.12		×						15 × 7	1.76	
15.13				×				15.5 × 9.5	1.75	
15.14	+		×				×	15 × 7	0.95	
15.15		×			↖	↗	×	16.5 × 8.5	1.31	
15.16		×					×	17.5 × 7	0.98	
15.17			×				×	14.5 × 6.5	0.89	
15.18			×		↗		×	15.5 × 9	0.98	
15.19			×		↗	↖	×	14.5 × 9	1.40	
15.20				×	↖			16.5 × 7.5	1.73	
15.21				×			×	17 × 6.5	1.11	
15.22		×						16.5 × 7.5	1.63	
15.23	+		×				×	15 × 8	0.91	
15.24		×			↖	↗	×	15.5 × 9	1.38	
15.25			×					14 × 8	0.95	
15.26				×				19.5 × 8.5	2.31	
15.27				×				16.5 × 8.5	2.16	
15.28				×			×	16 × 7.5	0.91	
15.29				×			×	18.5 × 7.5	1.05	
15.30			×				×	15.5 × 7	0.99	
15.31				×				14.5 × 9.5	0.75	
15.32			×					11.5 × 9	0.69	
16.1	+	×						17.5 × 7.5	0.92	
16.2		×			↗			16 × 6.5	0.70	
16.3			×		↖			14 × 7	0.82	
16.4	+	×				↗	×	17 × 7.5	1.30	
16.5				×				18.5 × 8	0.74	
16.6				×	↖			15 × 9	1.04	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
16.7			×		↗			16.5 × 8	1.36	
16.8		×						15.5 × 7.5	0.91	
16.9			×					15.5 × 9.5	1.13	
16.10		×			↗			18 × 9.5	1.27	
16.11	■		×					15.5 × 7.5	1.01	
16.12			×			×		16 × 7.5	0.95	
16.13		×				×		18.5 × 8	1.30	
16.14		×				×		17.5 × 9.5	1.08	
16.15			×			↗	×	18.5 × 9	1.36	
16.16	+		×					15 × 7.5	1.06	
16.17		×						15 × 7.5	0.97	
16.18			×					15 × 9.5	1.15	
16.19		×				↖	×	17 × 8.5	1.09	
16.20		×						15.5 × 8	1.16	
16.21	+	×				↗	×	16 × 7.5	0.99	
16.22			×					18 × 7.5	0.86	
16.23				×				15 × 10	1.14	
16.24			×		↗			18.5 × 6.5	1.53	
16.25				×				16 × 6.5	1.09	
16.26				×				16.5 × 6.5	0.80	
16.27		×						19 × 8	1.18	
16.28		×						17.5 × 9	1.27	
16.29				×	↖			17 × 8	0.85	
16.30	+		×					17 × 10.5	1.27	
16.31			×			↗		15 × 7.5	0.90	
16.32			×					17.5 × 9	1.90	
16.33		×				×		18.5 × 9.5	1.26	
16.34		×						16.5 × 8	1.03	
16.35				×		×		16.5 × 8.5	1.26	
16.36		×						11 × 8	0.44	
16.37			×		↖	↗		10.5 × 7.5	0.73	
16.38				×				11 × 8	0.70	
16.39				×		↗		16 × 6.5	0.89	
16.40				×				19.5 × 6	1.87	
16.41				×		×		15.5 × 9.5	1.08	
16.42				×				14 × 6.5	0.87	
16.43			×					15 × 9	0.99	
16.44				×				15 × 8	0.96	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
16.45	★			×	↗			15 × 8	0.85	
16.46				×				18.5 × 8.5	1.26	
16.47				×				15 × 7.5	0.72	
16.48		×				×		14.5 × 8.5	1.18	
16.49				×				11.5 × 8	0.69	
16.50		×				×		-----	1.08	
17.1		×						18 × 8.5	1.34	
17.2		×						15 × 6	0.42	
17.3		×				×		17 × 8.5	1.30	
17.4			×					16.5 × 8.5	1.01	
17.5		×				×		17 × 7	1.06	
17.6		×						15.5 × 6	0.76	
17.7	+			×		×		14.5 × 9	0.81	
17.8	+		×		↖	×		17 × 9.5	1.66	
17.9		×				↗		17.5 × 8	0.66	
17.10			×			×		14.5 × 6.5	1.10	
17.11		×				×		15.5 × 8.5	1.24	
17.12			×		↗	↖		15.5 × 8.5	0.96	
17.13			×			↗	×	16 × 8	1.04	
17.14			×					10 × 7	0.53	
17.15				×				15 × 8	2.08	
17.16				×		×		15.5 × 8	1.20	
17.17		×						19 × 10.5	1.01	
17.18				×	↗			16.5 × 8	1.90	
17.19				×				17 × 8	0.92	
17.20				×	↗			15.5 × 6.5	1.24	
17.21			×					15.5 × 8	1.25	
17.22		×						17.5 × 8	1.47	
17.23		×			↗	↖	×	16 × 8	1.28	
17.24			×		↖	↗	×	17 × 9.5	1.63	
17.25			×			×		17 × 8.5	1.20	
17.26		×			↗			15 × 8	0.67	
17.27				×				17 × 7.5	1.38	
17.28		×						16 × 6	0.74	
17.29				×		×		14.5 × 7.5	1.03	
17.30				×		×		15.5 × 8	1.19	
17.31				×		×		16.5 × 6.5	1.05	
17.32				×		×		17.5 × 7.5	0.90	

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
17.33				×			×		18 × 7	1.29
17.34				×					17 × 7	0.71
17.35				×					18 × 8.5	2.09
17.36			×						15.5 × 7.5	1.50
17.37				×			×		17 × 7.5	0.82
17.38				×					16.5 × 8	0.96
17.39				×			×		15.5 × 8	1.23
17.40				×					15.5 × 7.5	0.97
17.41				×			×		19.5 × 7	1.21
17.42				×					18 × 7	0.72
17.43				×					19 × 8.5	1.66
17.44				×			×		15 × 7.5	0.89
17.45				×					21 × 10	2.12
17.46				×					15 × 7	1.04
17.47				×					18.5 × 10	1.84
17.48				×					18 × 11.5	2.12
18.1		×			↖	↗			15 × 7	0.72
18.2			×			↗			17 × 7.5	1.33
18.3		×							16 × 8	1.46
18.4			×		↗	↗	×		17 × 8.5	1.39
18.5		×					×		17.5 × 8	1.33
18.6				×					16.5 × 9.5	1.05
18.7	+		×		↗	↗			16.5 × 8.5	1.08
18.8		×				↖	×		15 × 6.5	1.14
18.9			×			↖			17 × 8.5	1.68
18.10				×					16 × 7.5	0.88
18.11				×					16.5 × 9.5	1.41
18.12			×		↖	↗			17 × 8.5	1.16
18.13				×	↗				15.5 × 8	1.22
18.14			×				×		15 × 6.5	0.78
18.15		×			↖	↗			14.5 × 8	0.81
18.16			×			↗			19 × 7	1.37
18.17				×					18 × 9.5	2.06
18.18		×					×		18.5 × 7	1.25
18.19				×			×		15 × 8.5	1.00
18.20		×							16 × 8.5	1.20
18.21			×						17 × 8	1.28
18.22				×			×		14.5 × 7.5	1.02

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
18.23				×			×		17 × 6.5	0.86
18.24				×					14.5 × 6	0.68
18.25				×					13.5 × 8	1.49
18.26				×					16.5 × 6.5	1.06
18.27				×					15.5 × 8	1.08
18.28			×				×		17.5 × 10	1.22
18.29				×	↖		×		15 × 8.5	1.35
18.30				×					18 × 8.5	1.47
18.31				×			×		16 × 8	1.06
18.32				×	↖				19 × 8.5	1.05
18.33		×					×		12.5 × 6.5	0.65
18.34				×					17.5 × 8	1.20
18.35				×			×		14 × 6.5	1.25
18.36				×					16 × 8	0.95
18.37				×	↗		×		14.5 × 9.5	0.86
18.38				×					10.5 × 10.5	0.70
18.39				×					12 × 9.5	0.68
19.1	+			×			×		14.5 × 7.5	1.30
19.2		×					×		15 × 8.5	1.15
19.3	+		×				×		14 × 7.5	1.07
19.4	+		×				×		15.5 × 8	1.20
19.5	+		×			↗	×		16 × 9	1.02
19.6		×					×		16 × 9	1.15
19.7				×	↖		×		14.5 × 7	0.98
19.8				×					14.5 × 8	1.20
19.9	+		×				×		14 × 8	1.22
19.10			×			↗	×		15.5 × 7.5	0.88
19.11				×			×		16 × 9	1.66
19.12				×			×		16.5 × 8	1.33
19.13			×						15 × 6.5	0.90
19.14		×					×		18 × 8.5	1.59
19.15				×			×		14.5 × 8	1.23
19.16		×					×		17 × 10	1.37
19.17	+			×					13 × 8	1.00
19.18				×	↖		×		16.5 × 8	1.08
19.19				×	↗		×		14.5 × 6	0.86
19.20				×					12 × 7	0.57
19.21		×				↗			15.5 × 7.5	0.94

no.	obv. dies	obv. to rev.			obv. die-axis	rev. die-axis	bent	halved	mm	g
		↑	↓	?	given when not ↑	given when not ↑				
19.22		×			↗			15.5 × 7	1.85	
19.23		×						15.5 × 8.5	0.72	
19.24				×		×		17 × 10	2.34	
19.25				×		×		16.5 × 8	1.02	
19.26				×				14.5 × 8.5	0.78	
19.27				×				17.5 × 9	1.09	
19.28		×						16 × 6.5	0.80	
19.29		×						16.5 × 8	1.31	
19.30				×		×		15 × 7.5	1.31	
19.31				×		×		17 × 8.5	1.36	
19.32				×				14 × 7	0.82	
19.33				×		×		12 × 7.5	0.72	
19.34		×						11 × 8	0.58	
19.35				×				09.5 × 7.5	0.52	
19.36				×		×		12 × 6.5	0.92	
19.37				×				11.5 × 7	0.79	
20.1		×			↖	↗		16 × 7.5	0.86	
20.2			×					15 × 8.5	1.19	
20.3	+		×		↗			18 × 8	1.14	
20.4	+		×			×		16.5 × 8	1.19	
20.5		×				×		16 × 6.5	0.52	
20.6		×				×		15.5 × 7.5	1.07	
20.7				×				15 × 9	1.26	
20.8				×				15 × 8.5	1.15	
20.9				×	↖	×		14 × 7	1.18	
20.10				×				16 × 7.5	0.99	
20.11			×					15 × 7.5	1.19	
20.12			×			×		16 × 7.5	1.29	
20.13		×						15 × 10.5	0.90	
20.14			×			×		17 × 7.5	1.53	
21.1		×				×		16 × 8.5	1.02	
21.2		×				↖	×	16.5 × 7.5	0.95	

- 11 ex.
- 12 ex.
- +
- ★ 4 ex.
- ◆ 2 ex.
- 2 ex.