

Plate Screens
Square Holes
Dimensions



Lochplatten; Quadratlochung, Maße

For connection with the Standard 2194 issued by the International Organization for Standardization (ISO), see Explanations.

Dimensions in mm

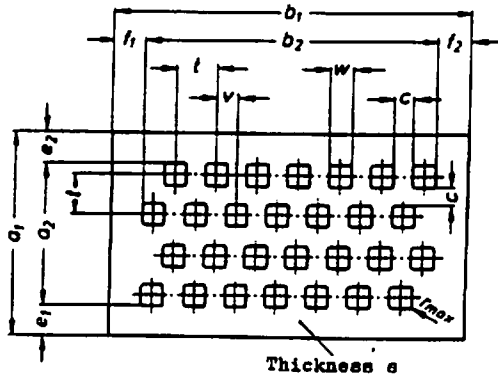


Figure 1. Qv square holes in staggered rows

Relative clear hole area

$$a_{o1}) = \frac{100 \cdot w^2}{t^2} \text{ in } \%$$

$$a_2 = x \cdot t + w, \quad r_{\max} = 0,15 \cdot w$$
$$b_2 = y \cdot v + w, \quad v = 0,5 t$$

x = number of spacings t
y = number of spacings v

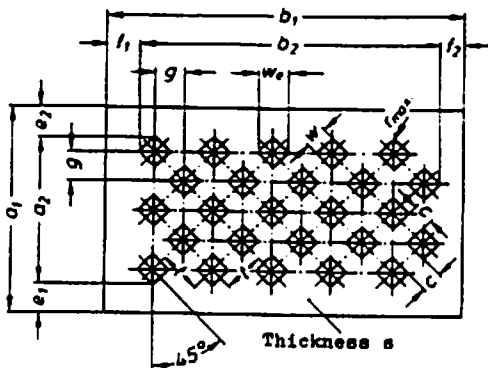


Figure 2. Qd square holes in diagonally staggered rows

Relative clear hole area

$$a_{o1}) = \frac{100 \cdot w^2}{t^2} \text{ in } \%$$

$$a_2 = Z_1 \cdot g + w_e, \quad g = 0,707 t, \quad r_{\max} = 0,15 \cdot w$$
$$b_2 = Z_2 \cdot g + w_e, \quad w_e = 1,414 w$$

Z1 = number of spacings g parallel to a2
Z2 = number of spacings g parallel to b2

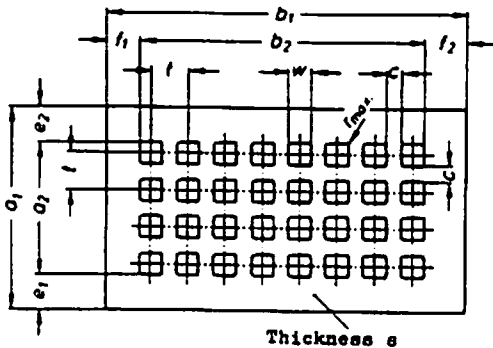


Figure 3. Qg square holes in straight rows

Relative clear hole area

$$a_{o1}) = \frac{100 \cdot w^2}{t^2} \text{ in } \%$$

$$a_2 = x_1 \cdot t + w, \quad r_{\max} = 0,15 w$$
$$b_2 = x_2 \cdot t + w,$$

x1 = number of spacings t parallel to a2
x2 = number of spacings t parallel to b2

1) Referred to a hole with adjoining half-ligament widths, i.e. without taking the margins into account.

Continued on pages 2 to 4
Explanations on page 4

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Table 1. (continued)

Column	1	2	3	4	5	6	7	8	9	10	11	12
Row	Hole size w			Pitch t		Gauge length		Thickness of plate screens (nominal dimension) s (max. 2)	Finish ³⁾			
	Main series R 10	Subsidiary series R 20	perm. var.		perm. var.		perm. var.		Qv	Qd	Qg	$a_o \approx \%$
34		18		22				3	x			66
35		18		25				6	x			52
36		18		28				8	x			41
37	20	20		25				4	x		x	64
38	20	20		28				6	x			51
39	20	20		32				8	x			39
40		22,4		28				4	x			64
41		22,4	+ 0,4 - 0,6	32	± 1,6	6 · t	± 5	8	x			49
42		22,4		36				10	x			39
43	25	25		32				5	x			61
44	25	25		36				8	x			48
45	25	25		40				10	x			39
46		28		36				6	x			60
47		28		40				10	x			49
48		28		45				12	x			39
49	31,5	31,5		40				6	x			64
50	31,5	31,5		45				10	x			50
51	31,5	31,5		50				12	x			41
52		35,5		45				8	x			62
53		35,5		50				12	x			50
54		35,5		56				15	x			40
55	40	40		50				8	x			64
56	40	40		60				12	x			44
57	40	40		70				15	x			33
58		45		56				8	x			64
59		45		63				12	x			51
60		45		70				15	x			41
61	50	50	+ 0,6 - 1	70	± 2,5	4 · t	± 6,3	10	x			51
62	50	50		80				15	x			39
63	50	50		90				15	x			31
64		56		70				10	x			64
65		56		80				15	x			49
66		56		90				15	x			39
67	63	63		80				12	x			62
68	63	63		90				15	x			49
69	63	63		100				15	x			44
70		71		90				15	x			62
71		71		100				15	x			50
72	80	80		100				12	x			64
73		90		110				12	x			67
74		90		125				12	x			52
75	100	100	+ 1 - 1,5	125	± 4	3 · t	± 8	10	x			64
76		112		140				10	x			64
77		112		160				10	x			49
78	125	125		160				10	x			61

Preference shall be given to the values of the main series.

Note: The permissible variations for the pitch mentioned may result in visible lanes. If these are to be excluded, separate agreement shall be reached to this effect. For special purposes intermediate sizes of pitches are permissible. These, however, should always be divisible by 1, 1.25, 1.5 or 1.75 in the range from 1 to 25 mm and, correspondingly, by 2, 3 or 5 in the case of pitches larger than 25 mm.

2) and 3) see page 2

Margin:

According to plate size, hole size and pitch, the production process can result in a standard margin e_1 and $e_2 = 40$ to $40 + t$ or $40 + g$, and f_1 and $f_2 = 40$ to $40 + t$ or $40 + g$ (average value for different manufacturing methods). Smaller or larger margins e_1 , e_2 , f_1 and f_2 are to be determined by using the formulae quoted, whilst observing the pitches according to Table 1, and indicated in the designation.

In the case of formed plates and plates with non-standard margins, a sketch should be appended to the order.

Examples of designations:

Designation of square holes in staggered rows (Qv) with hole size $w = 5$ mm, pitch $t = 8$ mm:

Perforation Qv 5 - 8 DIN 24042

Designation of a plate screen 2 mm thick, $a_1 = 1000$ mm, $b_1 = 2000$ mm, perforation Qv 5 - 8, with standard margin, in steel plate:

Plate screen 2 x 1000 x 2000 Qv 5 - 8 DIN 24042 - steel plate

Designation of a plate screen 2 mm thick, $a_1 = 1100$ mm, $b_1 = 1600$ mm in fixed dimensions, perforation Qv 5 - 8, with margin (Ra) $e_1 = 10$ mm, $e_2 = 18$ mm and f_1 or $f_2 = 25$ mm, in steel plate:

Plate screen 2 x 1100 x 1600 fixed Qv 5 - 8 Ra 10/18 x 25 DIN 24042 - steel plate

Table 1. Dimensions

Column	1	2	3	4	5	6	7	8	9	10	11	12
Row	Hole size w			Pitch t		Gauge length		Thickness of plate screens (nominal dimension) s max. 2)	Finish ³⁾			
	Main series R 10	Subsidiary series R 20	perm. var.		perm. var.		perm. var.		Qv	Qd	Qg	a_0 %
1	2			3,5				1	x			33
2	2			4				1,25	x			25
3	2,5			4				1,25	x			39
4	2,5			5				1,5	x			25
5	3,15		$\pm 0,2$	5	$\pm 0,6$	16 · t	± 5	1,5			x	40
6	3,15			6				2	x			27
7	4			6				1,5			x	44
8	4			7				2,5	x		x	33
9	4			8				3	x			25
10	5			7				1,5	x			51
11	5			8				2,5	x		x	39
12	5			10				4	x			25
13	6,3			9				2			x	49
14	6,3			10				3	x			40
15	6,3			12				4	x			27
16	8		$+ 0,2$ $- 0,4$	10	± 1	10 · t	± 5	1,25			x	64
17	8			11				2			x	53
18	8			12				3	x	x	x	44
19	8			14				5	x			32
20	10			12				1,25			x	69
21	10			14				3	x		x	51
22	10			15				4	x	x	x	44
23	10			18				6	x			31
24	12,5			16				2,5			x	61
25	12,5			18				4	x	x		48
26	12,5			20				6	x			39
27		14		18				3	x			60
28		14		20				5	x			49
29		14	$+ 0,4$ $- 0,6$	22	$\pm 1,6$	6 · t	± 5	6	x			40
30		14		25				8	x			31
31	16	16		20				3			x	64
32	16	16		22				5	x			53
33	16	16		25				8	x	x		41

2) The thicknesses apply to steel plates up to ≈ 500 N/mm² (50 kp/mm²) tensile strength. Plate screens in thicker plate count as special manufacture and are not covered by this Standard.

3) Standardized types are denoted by x.

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Material: to be stated in the designation.

Finish:

Plate screens in manufacturing dimensions: uncut
 in fixed dimensions: cut square after perforating and mechanical straightening

Mode of delivery:

Plate screens in manufacturing dimensions normally 1000 mm x 2000 mm, 1250 mm x 2500 mm and 1500 mm x 3000 mm.

Plate screens in fixed dimensions

Values for a_1 and b_1 should preferably be chosen in such a way that they can be made from plate screens in manufacturing dimensions after allowance is made for the permissible dimension variation according to Tables 2 to 4 and the cutting allowance.

The values are to be quoted in the designation plus the addendum "fixed" behind the length value.

Permissible dimension and form variations:

The plates are mechanically straightened; any special requirements in regard to flatness are to be agreed when ordering.

Table 2. Permissible length and width variations in the case of fixed dimensions

Thickness s	permissible variations for a_1 and b_1					
	above 30 to 100	above 100 to 300	above 300 to 1000	above 1000 to 2000	above 2000 to 4000	above 4000
up to 5 mm	± 0,8	± 1,2	± 2	± 3	± 4	± 5
above 5 mm	± 1,5	± 2	± 3	± 5	± 8	± 10

Table 3. Permissible variations from squareness

Thickness s	permissible variations
up to 5 mm	± 10' (≈ ± 0,3 mm per 100 mm leg length)
above 5 mm	± 30' (≈ ± 0,9 mm per 100 mm leg length)

Table 4. Permissible margin variations

Pitch t	permissible variations for e_1, e_2, f_1 and f_2
up to 5 mm	± 5 mm
above 5 to 20 mm	± 10 mm
above 20 mm	± $\frac{t}{2}$

Other relevant standards

For screen bottoms; definitions and symbols for perforated screen bottoms, see DIN 4185 Part 2

For plate screens; round holes, dimensions, see DIN 24041

For plate screens; longitudinal holes, dimensions, see DIN 24043

Explanations

In the International Standard ISO 2194-1972

Wire screens and plate screens for industrial purposes - Nominal sizes of apertures

Toiles et feuilles ou plaques perforées pour tamisage industriel - Dimensions nominales des ouvertures of the International Organization for Standardization (ISO), the Technical Committee ISO/TC 24 "Screens, screening and other particle size measuring methods" has specified screen apertures for industrial screens ranging from 125 mm to 20 µm, the nominal dimensions of the preferred number series R 10 being preferred, with the preferred number series R 20 and R 40 according to DIN 323 available as alternatives.

In conformity with the ISO standard mentioned above, the present German standard divides the dimensions for hole sizes into a main series (R 10) which should be given preference, and a subsidiary series (R 20).

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