



Q/FJHD

企业标准信息

Q/F 1108-2022

Safety rules for the construction and installation of lifts



| | |
|---------------|----|
| | 5 |
| | 8 |
| 1 | 9 |
| 2 | 10 |
| 3 | 11 |
| 4 | 12 |
| 5 | 12 |
| 5.1 | 12 |
| 5.2 | 14 |
| 5.3 | 15 |
| 5.4 | 16 |
| 5.5 () | 17 |
| 5.6 | 17 |
| 5.7 | 18 |
| 5.8 | 19 |
| 5.9 | 20 |
| 5.10 | 20 |
| 6 | 19 |
| 6.1 | 19 |
| 6.2 | 20 |
| 6.3 | 21 |
| 6.4 | 22 |
| 7 | 23 |
| 7.1 | 23 |
| 7.2 | 24 |
| 7.3 | 27 |
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| 12.10 | | 56 |
| 12.11 | | 56 |
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| 13.3 | | 58 |
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| 13.5 | | 60 |
| 13.6 | | 61 |
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| 15.9 | | 71 |
| 15.10 | | 72 |
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| | | |
|------|-------|-----|
| 16.1 | | 72 |
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| A | | 76 |
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企业标准信息网
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GB/T 7588.1/2

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2022

07

22

19

27

...

GB/T 7588.1/2

2022

07

22

19

27

0

0.1

0.1.1

0.1.2

0.1.2.1

a)

b)

c)

d)

e)

f)

g)

h)

1)

2)

3)

0.1.2.2

a)

b)

c)

()

0.1.2.3

a)

b)

c)

0.2

0.2.1

1

c



0.2.3

()

a)

b)

(

)

c)

0.2.4

0.2.5

a)

b)

c)

d)

0.3

0.3.1

a)

b)

c)

d)

0.3.2

0.3.3

0.3.4

0 100

0.3.5

0.3.6

0.3.7

()

0.3.8

0.3.9

a) 300 N

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b)

1000N

0.3.10



1

2

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GB/T 786.1

1

GB/T 786.1 2009 ISO 1219-1:2006 IDT

GB/T 3639

GB 4053.1

1

GB 4053.2

2

GB/T 4208 (IP) GB/T 4208 2017 IEC 60529:2013

IDT

GB/T 4728

IEC 60617 database

GB/T 5013.5

450/750V

5

GB/T 5013.5 2008

IEC 60245-5:1994 IDT

GB/T 5023.6

450/750V

6

GB/T 5023.6 2006 IEC 60227-6:2001 IDT

GB/T 5226.1 2019

1

IEC 60204-1:2016

IDT

GB/T 5465.2 2008

2

IEC 60417

DB 2007 IDT

GB/T 7588.2 2020

2

ISO

8100-2:2019 MD

GB 8624

GB/T 8903 GB/T 8903 2018 ISO 4344:2004 MD



GB/T 12668.502 2013 5-2 IEC
 61800-5-2:2007
 IDT
 GB/T 13793
 GB/T 14048.4 2010 4-1
 IEC 60947-4-1:2009 Ed.3.0 MOD
 GB/T 14048.5 2017 5-1

 IEC 60947-5-1:2016 MOD
 GB/T 14048.14 5-5
 GB/T 14048.14 2019 IEC 60947-5-5:2016 IDT
 ISO
 GB/T 15706 2012
 12100:2010 IDT
 GB/T 16895.2 2017 4-42 IEC
 60364-4-42:2010
 IDT
 GB/T 16895.21 2011 4-41 : IEC
 60364-4-41:2005
 IDT
 GB/T 16895.23 2012 6 IEC 60364-6:2006
 IDT
 GB/T 16935.1 1 GB/T
 16935.1 2008
 IEC 60664-1:2007 IDT
 GB/T 17889.2 2012 2 79
 GB/T 18209.3 273
 GB/T
 18209.3 2010 IEC 61310-3:2007 IDT
 GB/T 18775
 GB/T 21711.1 1 GB/T 21711.1
 2008 IEC
 61810-1:2003 IDT
 GB/T 23821 2009 ISO
 13857:2008 IDT
 GB/T 24475



GB/T 24476 2017

GB/T 24480

GB/T 24807

GB/T 24808

GB/T 27903

GB/T 32957

GB 50017

GA 494

JB/T 8734.6

450/750V

6

IEC 61810-3

[Electromechanical elementary relays - Part 3: Relays with forcibly guided (mechanically linked) contacts]

EN 50274

Low voltage switchgear and controlgear assemblies - Protection against electric shock -

Protection against unintentional direct contact with hazardous live parts

3

GB/T 7024

3.1 traction drive lift

3.2 () positive drive lift

3.3 non-commercial vehicle lift

3.4 pulley room

3.5 available car area

1m

3.6 re-leveling

()



3.7 minimum breaking load of a rope
(mm²) (N/mm²)

3.8 safety rope
()

3.9 user

3.10 passenger

3.11 authorized and instructed user

a)

b)

3.12 lift machine

3.13 balancing weight

3.14 electric safety chain

3.15 inspection trap

3.16 emergency door to the well
11m

3.17 laminated glass

3.18 unintended car movement

4

4.1

(SI)

4.2

5

5.1

5.1.1

5.1.2

()

()

5.2

5.2.1



C

H

D



5.2.2.1.2

0.50m

0.50m

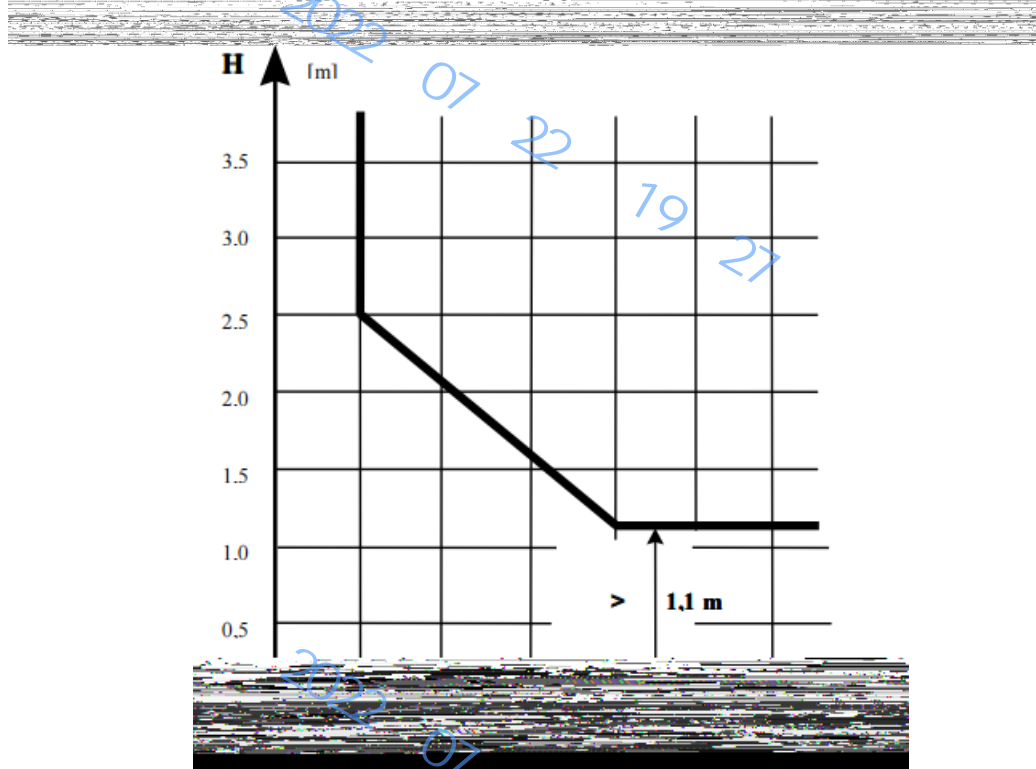
1m

11m

8.12.3

5.2.2.2

5.2.2.2.1



5.2.2.2.2 ²

14.1.2
(5.7.3.2)

()
2m

5.2.2.3

5.2.3



1

5.3

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5.3.1

5.3.1.1

300N

5cm²

a)

b)

15mm

5.3.1.2

5.2.1.2

5.3.2

5.3.2.1

(N) [G()G2.3 G2.4]

5.3.2.2

4g_n(P+Q)

P—

)

kg

Q—

kg

9.81 m/s²

g_n—

5.3.2.3

() 4

4g_n(P+qQ)

4g_nqP

:

q—

5.3.3

6.3.1 ()6.4.1
G5.1

5.4

5.4.1

5.4.2



5.4.3

a) 1/2

50mm, 25mm

b) 5cm² 300N

1) 10mm 5mm 2mm

c) 75°

d) 600

20mm ()

()

5000N/m²

a) ()

b) ()

5.6

5.6.1 () 0.30m 2.50m

() 0.10m GB 12265.1—1997 4.5.1

5.6.2 GB 12265.1—1997 4.5.1

5.6.2.1 () 2.50m

5.6.2.2 [5.2.2.2 ()]

0.10m

0.50m



5.7

5.7.1

K()

5.7.1.1

a) $0.1+0.035 v^2(m)$

注: $0.035 v^2$ 表示对应于15%额定速度 v 时的重力制停距离的一半。即 $\frac{1}{2} \times \frac{(1.15v)^2}{2g_H} = 0.0337 v^2$,

圆整为 $0.035 v^2$ 。

b) ~~8.13.2 [5.7.1.1c]~~

) $1.0+0.035 v^2(m)$

c) 1) [2]

2) $0.3+0.035 v^2(m)$

$0.1+0.035 v^2(m)$

d) $0.50m \times 0.60m \times 0.80m$ ()

0.15 m

5.7.1.2

$0.1+0.035 v^2(m)$

5.7.1.3

5.7.1.2

2022 07 22

12.8

5.7.1.1

a) $4m/s$ $1/2$ 0.25m

b) $4m/s$ $1/3$ 0.28m

5.7.1.4

$0.035 v^2$ ()
 $1/500$ 0.20m

5.7.2

5.7.2.1

0.50m

5.7.2.2

a) $8.13.2$ [5.7.2.2b)

] ()
1m

b)



1)] 0.30 m [2]

2) 0.10m

c) 0.50m×0.60m×0.80m (

) 0.15 m ()

5.7.2.3 0.30 m

5.7.3

5.7.3.1

5.7.3.2

2.50m

5.2.2

5.7.3.3

a)

0.50m×0.60m×1.0m

b)

0.15m

0.50m

0.10m

1)

2)

c)

0.30m

b)1) b)2)

5.7.3.4

a)

14.2.2 15.7

b)

(13.6.2)

c)

(5.9)

5.8



5.2.1.2

a)

b)

1.50m

(5.2.1.2)

5.9

1m

50 lx

0.50m

5.2.1.2

5.10

14.2.3.2

14.2.3.3

6

6.1

6.1.1

()

(

a)

b)

c)

6.1.2

()

6.1.3

a)

b)

6.2

6.2.1

a)

b)

6.2.2

- a) 4m
- b)
- c) 1.50m 650 750
- d) 0.35m 25mm 1500N
0.15m

- e)
- f) 1.50m

- 6.3
- 6.3.1
- 6.3.1.1
- 6.3.1.2
- 6.3.2
- 6.3.2.1

- a) 2m
- 1) 0.70m
- 2) 0.50m
- b) 0.50m×0.60m
1.80m
- (12.5.1)
- 6.3.2.2 0.50m
- 6.3.2.1 0.40m

- a)
- b) 0.30m
- 6.3.2.3
- 6.3.2.4 0.50m



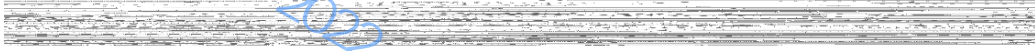
6.3.3.2

0.80m×0.80m

0.20m×0.2m

1000N

(



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19 27



6.4.2.2.2

6.3.2.1 6.3.2.2

6.4.3

6.4.3.1

0.60m

1.40m

6.4.3.2

0.80m×0.80m

0.20m×0.20m 1000N

6.4.3.3

()

6.4.4

50mm

6.4.5

14.2.2 15.4.4

6.4.6

6.4.7

100 lx

13.6.1

13.6.2

6.3.6

7

7.1

6mm

8mm

10mm

7.2

7.2.1

7.2.2

GA 109

7.2.3

7.2.3.1

a 300 N

5 cm²

1 1 mm

2 15 mm

b 1000 N

100 cm²

[7.1 10 mm 7.7.3.1]

a b

7.2.3.2

)

7.1

150N (6mm

a) 30mm

b) 45mm

7.2.3.3 /

7.2.3.4

7.2.3.5

a)

b)

c) [(8+0.76+8)mm]

7.2.3.6

7.6.2

a)

b) 1.10m

c)

d)

7.2.3.7



7.2.3.8

150 mm

a

J

7

1

2

0.12 m

3

4

b

J 79
7.6.2 a 27

7

1

2

2 mm

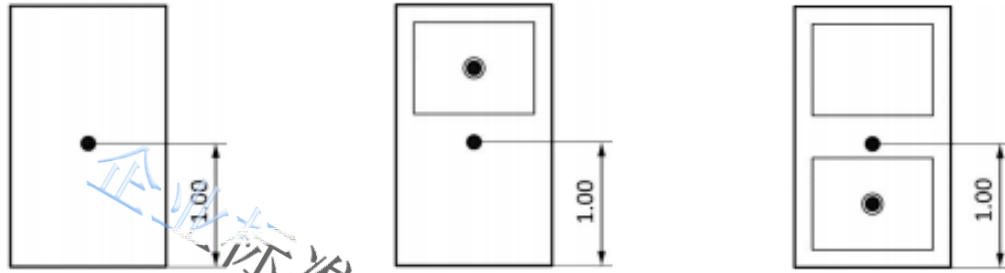
企业标准信息

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7

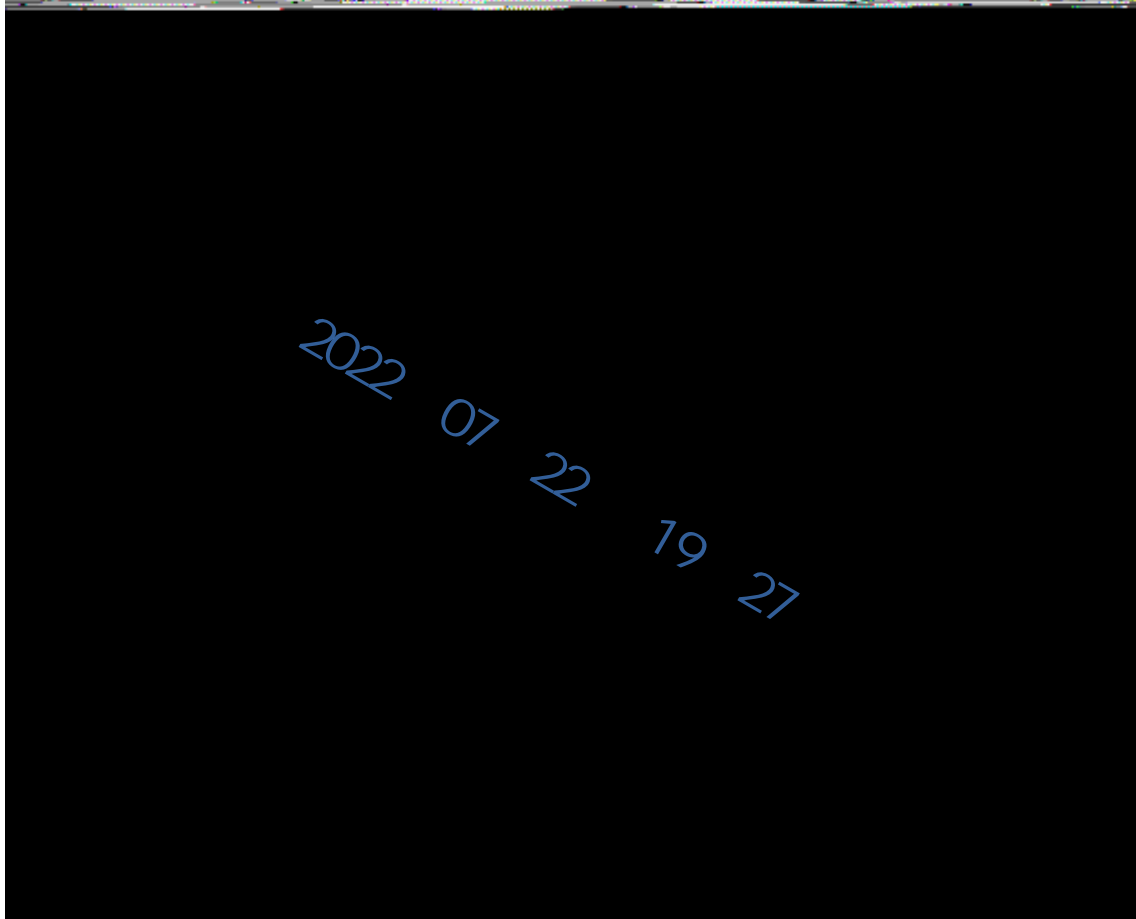
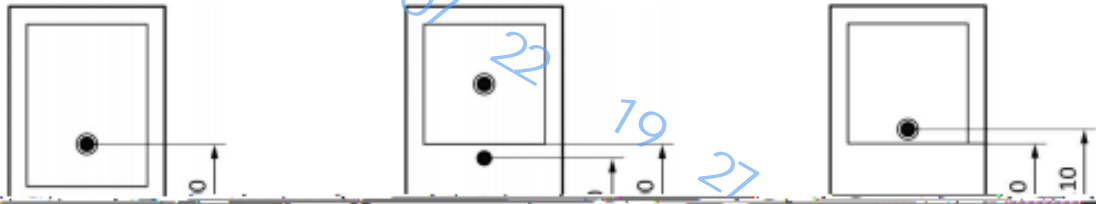
| | 800 nm | 800 nm | 500 nm | 500 nm |
|------------------|----------------|--------|----------------|--------|
| | 1.0 ± 0.1 m | | 1.0 ± 0.1 m | |
| [7a] | | | | |
| [7b] | x | x | | x |
| [7c] | x | x | | x |
| [7d] | x | | x | |
| 1 m [7e] | x | x | | x |
| 1 m [7f] | x | | x | |
| 150 nm [7g] | x | | | |
| 7.6 2 | x | x | | |
| x | | | | |



a) 无玻璃面板的门扇或
宽度大于 0.15 m 的侧
门框

b) 具有较小玻璃面板的
门扇或宽度大于 0.15 m
的侧门框

c) 具有多个玻璃面板的
门扇或宽度大于 0.15 m
的侧门框

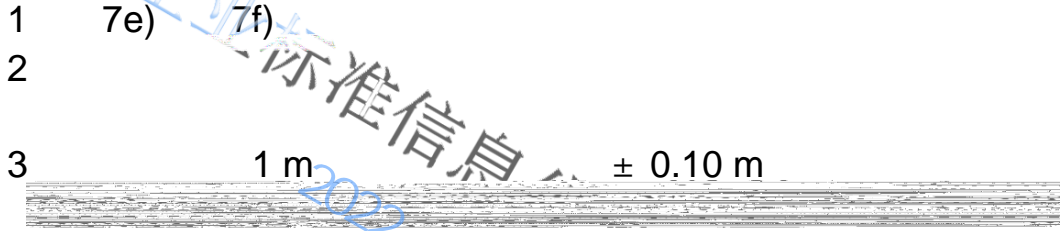


2 1.00 m ± 0.10m



g)

[7a 7b)]



7

7.3

7.3.1

2m

7.3.2

50mm

7.4

7.4.1

7.4.2

7.4.2.1

7.4.2.2

7.4.2.3

7.4.3

7.4.3.1

7.4.3.2

7.4.3.3

7.4.3.4

7.5

7.5.1

25

8



3mm

B()

7.5.2

7.5.2.1

7.5.2.1.1

7.5.2.1.1.1

150N

1/3

7.5.2.1.1.2

10J

a)

25mm

b)

50mm

25N/mm

7.5.2.1.1.3

(8.7.2.1.1.3)

50mm

7.5.2.1.1.2

4J

7.5.2.1.1.4

7.5.2.1.1.1

7.5.2.1.1.2

7.5.2.1.1.5

150N

()

100mm

7.5.2.1.2

)

7.5.2.1.1.2

10J

(

0.3m/s

7.5.2.2



a)

b)

0.3 m/s

c)

8.6.1

2/3

d)

7.5.2.3

7.6

7.6.1

50 1x

(0.2.5)

7.6.2 “ ”

a) b)

a)

1)

7.2.3.1

2)

6mm

3)

0.015m²

0.01m²

4)

60mm

150mm

80mm

1m

b)

“

”

7.7

7.7.1

()

0.2m

0.35m

7.7.2

7.7.2.1

7.7.2.2

7.7.2.2



a) 14.2.1.2

b) 8.4.3, 8.14 14.2.1.5

1.65m

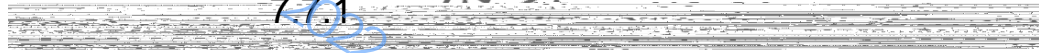
1)

2 m

2)

7.7.3

7.7.1



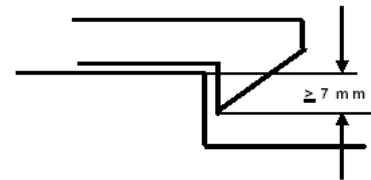
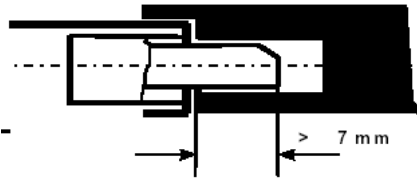
7.7.3.1

14.1.2

7.7.3.1.1

7mm

3



3

7.7.3.1.2

7.7.3.1.3

7.7.3.1.4

7.7.3.1.5

300N

7.7.3.1.6

F()FI

a)

1000N

b)

3000N

7.7.3.1.7



()

(

-)
- 7.7.3.1.8
- 7.7.3.1.9
- 7.7.3.1.10

企业标准信息

7.7.3.2

B

()

- 7.7.3.3
- 7.7.4
- 7.7.4.1

F1

14.1.2

7.7.2

7.7.4.2

7.7.4.3

- 7.7.5
- 7.7.5.1

7.7.5.2

- 7.7.6
- 7.7.6.1

a)7.7.4.1 7.7.4.2

b)

7.7.6.2

()

14.1.2



7.8

8

8.1

8.1.1

8.1.2

8.2

8.2.1

()
企业标准信息

2m

2m

1

1m

1

5

14.2.5

1

| 额定载重量/kg | 轿厢最大有效面积/m ² | 额定载重量/kg | 轿厢最大有效面积/m ² |
|-------------------|-------------------------|--------------------|-------------------------|
| 100 ¹⁾ | 0.37 | 900 | 2.20 |
| 180 ²⁾ | 0.58 | 975 | 2.35 |
| 225 | 0.70 | 1000 | 2.40 |
| 300 | 0.90 | 1050 | 2.50 |
| 375 | 1.10 | 1125 | 2.65 |
| 400 | 1.17 | 1200 | 2.80 |
| 450 | 1.30 | 1250 | 2.90 |
| 525 | 1.45 | 1275 | 2.95 |
| 600 | 1.60 | 1350 | 3.10 |
| 630 | 1.66 | 1425 | 3.25 |
| 675 | 1.75 | 1500 | 3.40 |
| 750 | 1.90 | 1600 | 3.56 |
| 800 | 2.00 | 2000 | 4.20 |
| 825 | 2.05 | 2500 ³⁾ | 5.00 |

1) 一人电梯的最小值;

2) 二人电梯的最小值;

3) 额定载重量超过2500kg时, 每增加100kg, 面积增加0.16m²。对中间的载重量, 其面积由线性插入法确定。

8.2.2

1

1

1

“ ”

a)

1



(
)

b)

14.2.5

c)

(15.5.3)

d)

e)

a) b) c)

d) e)

D()D2h)

D2j)

D2l)

200kg/m²

8.2.3

a) 75/

b) 2

2

| 乘客人数/人 | 轿厢最小有效面积/m ² | 乘客人数/人 | 轿厢最小有效面积/m ² |
|--------|-------------------------|--------|-------------------------|
| | | | |

8.3

8.3.1

a)

b)

c)

8.3.2



8.3.2.1

300N

5cm²

a)

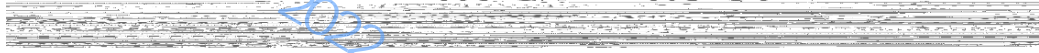
b)

15mm

8.3.2.2

J1

J



1.10m

0.90m 1.10m

8.3.2.3

8.3.2.4

a)

b)

c) [(8+0.76+8)mm]

8.3.2.5

8.13

8.3.3

8.4

8.4.1

60°

8.4.2

8.4.3

20mm

0.75 m

(14.2.1.5)

0.10m

8.5

8.6

8.6.1

10mm

60mm

8.6.2

8.6.3

6mm



8mm

10mm

8.6.1

8.6.4

8.6.5

[7.6.2a)]

7.6.2a)

8.6.6

7.4

8.6.7

8.6.7.1

300N

5cm²

a)

b)

15mm

c)

8.6.7.2

7.6.2

J2

J

8.6.7.3

8.6.7.4

a)

b)

c) [

(8+0.76+8)mm]

8.6.7.5

7.6.2

a)

b)

1.10m

c)

d)

8.7

8.7.1

3 mm



8.6.1

8.7.2

8.7.2.1

8.7.2.1.1

8.7.2.1.1.1

150N

1/3

8.7.2.1.1.2

10J

a)

25mm

b)

50mm

7.5.2.1.1.2 .

8.7.2.1.1.3

50mm

8.7.2.1.1.2

4J

8.7.2.1.1.4

150 N

()

100mm

8.7.2.1.1.5

15 mm

8.7.2.1.2

)

7.5.2.1.1.2

0.3m/s

10J

8.7.2.2

a)

b)

0.3 m/s

c)

8.6.1

d)

2/3



8.8

8.9

8.9.1 7.7.2.2 ()

8.9.2

8.9.1

8.9.3 [11.2.1c)
(7.7.3.1 7.7.3.3)

8.10

8.10.1

a) 8.9.2

1) ()

2)

b) 11.2.1c)

8.10.2 ()

8.9.2

a)

b)

8.11

8.11.1

300 N

7.7.1

a

b

8.11.2

a

50 N

b

7.7.1

1000 N

50 mm

8.11.3

9.11.5

8.9.3

8.11.4

11.2.1 c



8.12

8.12.1

12.5

8.12.2

0.35m×0.50m

8.12.3

0.75m(

5.2.2.1.2)

1.80m

0.35m

8.12.4

8.3.2 8.3.3

8.12.4.1

8.12.4.1.1

B

8.12.4.1.2

B

()

()

8.12.4.2

8.12.4.1

14.1.2

8.13

8.3

8.13.1

0.20m×0.20m

1000N

8.13.2

0.12m²

0.25m

8.13.3

0.30m

0.30m

8.13.3.1

0.10m

8.13.3.2



a) 0.85m 0.70m
 b) 0.85m 1.10m
 8.13.3.3 [()]

0.10m

8.13.3.4

8.13.3.5

0.15 m

8.13.4

8.13.5

8.13.6

()

9.7

8.14

14.2.1.5)

8.15

a) 14.2.1.3 ()

b) 14.2.2 15.3

c) 13.6.2

8.16

8.16.1

8.16.2

1

50

8.16.3

10mm

8.17

8.17.1

50

lx

50 lx

8.17.2

8.17.3

7.8

8.17.4

1W

1h

8.17.5

8.17.4

14.2.3



8.18

12.2.1

8.18.1

()

a)

b)

1m/s

8.18.2

() ()

9.7

9

9.1

9.1.1

()

9.1.2

a)

8mm

b)

1)

1570MPa 1770MPa

2)

1370MPa

1770MPa

c)

()

GB 8903

9.1.3

9.1.4

9.2

9.2.1

40

9.2.2

N()

a)

b)

16

c)

12

(N)

(N)

9.2.3

9.2.3.1

80

9.2.3.1

()

()



9.2.3.2

9.2.4

10

9.2.2

9.2.5

()

80

9.3

a)

125 8.2.1 8.2.2

b)

() 19 27

c)

M()

9.4

9.4.1 12.2.1b)

9.4.2

9.4.3

9.4.4

() 4°

9.5

9.5.1

9.5.1.1

9.5.1.2

9.5.2

9.5.3

14.1.2

9.5.4

9.6

9.6.1

a)

b)

30



- c) 9.7
 - d)
 - e) 14.1.2
- 9.6.2 3.5 m/s 9.6.1

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- 14.1.2
- 9.7
- 9.7.1 3

- a)
 - b)
 - c)
- 3 19

| 曳引轮、滑轮及链轮的位置 | | 根据9.7.1的危险 | | |
|--------------|-----|-----------------|---|-----------------|
| | | a | b | c |
| 轿厢上 | 轿顶上 | × | × | × |
| | 轿底下 | | × | × |
| 对重或平衡重上 | | | × | × |
| 机房内 | | × ²⁾ | × | × ¹⁾ |
| 滑轮间内 | | | × | |

- 9.7.2
- GB12265.1—1997 4

- a)
- b)
- c)
- 9.8
- 9.8.1
- 9.8.1.1

9.10



9.8.1.2 5.5b) ()
 () 9.8.3.1
) ()

9.8.1.3 F3

9.8.2

9.8.2.1 0.63 m/s

0.63m/s

9.8.2.2

9.8.2.3 1m/s ()

9.8.3

9.8.3.1 ()
 1m/s ()

9.8.3.2

9.8.4

0.2g_n—1.0g_n

9.8.5

9.8.5.1

9.8.5.2 () ()

9.8.6

9.8.6.1

9.8.6.2 ()

9.8.6.3

9.8.7

5

9.8.8

14.1.2

9.9

9.9.1

115

a) 0.8m/s

b) 1m/s



c) 1m/s 1.5m/s
 d)对于额定速度大于1m/s的渐进式安全钳为 $1.25v + \frac{0.25}{v}$ m/s)。

9.9.2 1m/s d)
 9.9.3 () 9.9.1 9.9.1

9.9.4

a)
 b)300N

a)
 b) M2.2.1

9.9.5
 9.9.6
 9.9.6.1
 9.9.6.2

8

$\mu_{max}=0.2$
 6mm

9.9.6.3
 9.9.6.4
 9.9.6.5
 9.9.6.6

30

9.9.6.7
 9.9.7

(F3.2.4.1)

9.9.8
 9.9.8.1
 9.9.8.2
 9.9.8.3

9.9.8.2

a) () 9.9.9

b)

c) ()



9.9.9

9.9.1

9.9.10

9.9.11

9.9.11.1

14.1.2

1m/s

9.9.11.2

(9.8.5.2)

14.1.2

14.2.1.4c)5)

9.9.11.3

14.1.2

9.9.12

F4

9.10

9.10.1

115

9.9.3

9.10.2

9.10.1

9.10.3

9.10.4

a)

b)

c)

d)

(

(

)

)

9.10.5

14.1.2

9.10.6

9.10.7

9.10.8

9.10.9

1g_n

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9.10.10

a) 9.9

b) 9.9.1 9.9.2 9.9.3 9.9.7 9.9.8.1 9.9.9 9.9.11.2
9.9.4 9.9.6.1 9.9.6.2 9.9.6.5 9.9.10 9.9.11.3

9.10.11

F7

9.11

9.11.1

14.2.1.2

9.11.3 9.11.4

/

9.11.2

9.11.3

12.4.2

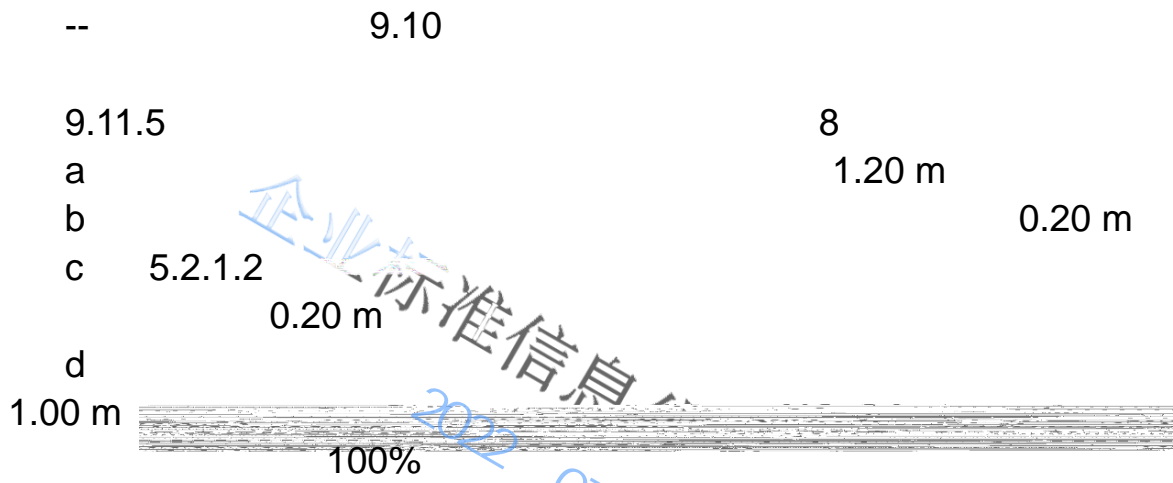
15

24

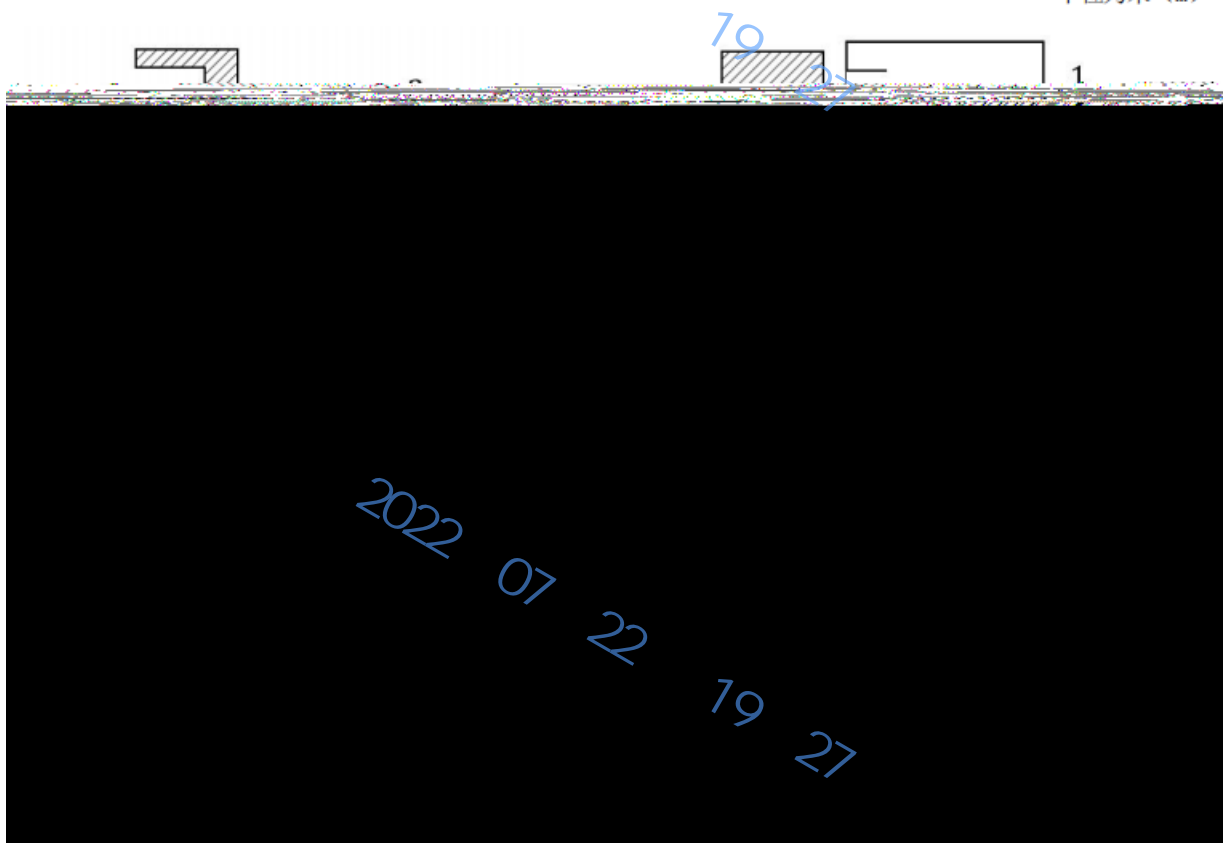
9.11.4

- a
- b
- c
- d
- e

--



单位为米 (m)



—
—
—
—
—



9.11.6

--

1 gn

--

9.11.7

7.7.1

14.1.2

9.11.8

14.1.2

9.11.7

9.11.9

9.11.10

9.11.11

9.11.12

9.11.13

F8

10

10.1

10.1.1

a)

()

b)

1)

2)

3)

G2

G3

G4

(0.2.5)

G

10.1.2

10.1.2.1

$$\sigma_{perm} = \frac{R_m}{S_t}$$

perm —

MPa

R_m —

MPa

S_t —

4

4

| | | |
|-------|-----------------------|------|
| 载荷情况 | 延伸率(A_5) | 安全系数 |
| 正常使用 | $A_5 \geq 12\%$ | 2.25 |
| | $8\% \leq A_5 < 12\%$ | 3.75 |
| 安全钳动作 | $A_5 \geq 12\%$ | 1.8 |
| | $8\% \leq A_5 < 12\%$ | 3.0 |

8
JG/T 5072.1 (MPa) 5
5

| | | | |
|-------|--------------|-----|-----|
| 载荷情况 | R_m MPa | | |
| | 370 | 440 | 520 |
| 正常使用 | 165 | 195 | 230 |
| 安全钳动作 | 205 | 244 | 290 |

10.1.2.2 “T”

a) ()

5mm

b) ()

10mm

10.1.3

10.2 ()

10.2.1 ()

10.2.2

a) 0.4m/s

b)

10.2.3 ()

10.3

10.3.1



10.3.5

10.3.6

F5

10.4

L()

10.4.1

10.4.1.1

10.4.1.1.1

115

0.135 ²(m)

65mm

注: $\frac{2 \times (1.15v)^2}{2g_n} = 0.1348v^2$, 四舍五入到 $0.135v^2$

10.4.1.1.2

) 2.5 4

10.4.1.1.1

10.4.1.2

10.4.1.2.1

a)

115

1g_n

b)2.5g_n

0.04s

c)

1 m/s

d)

10.4.1.2.2

5.7.1.1

5.7.1.2

5.7.2.2

5.7.2.3

5.7.3.3

”

90

10.4.2 ()

10.4.3

10.4.3.1

115

0.067 4 ²(m)

10.4.3.2

12.8

10.4.3.1

()

a)

4m/s

10.4.3.1

50

0.42m

b)

4m/s

10.4.3.1

1/3

0.54 m

10.4.3.3

a)

115

1g_n

b)2.5 g_n

0.04s

c)

10.4.3.4



14.1.2

10.4.3.5

10.5

10.5.1

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10.5.2

10.5.2.1

10.5.2.2

a)

b)

c)

10.5.2.3

a)

b)

14.1.2

10.5.3

10.5.3.1

a)

12.4.2.3.2

b)

1) a)

2)

14.1.2

12.4.2.3.1

12.7.1

13.2.1.1

c)

10.5.3.2

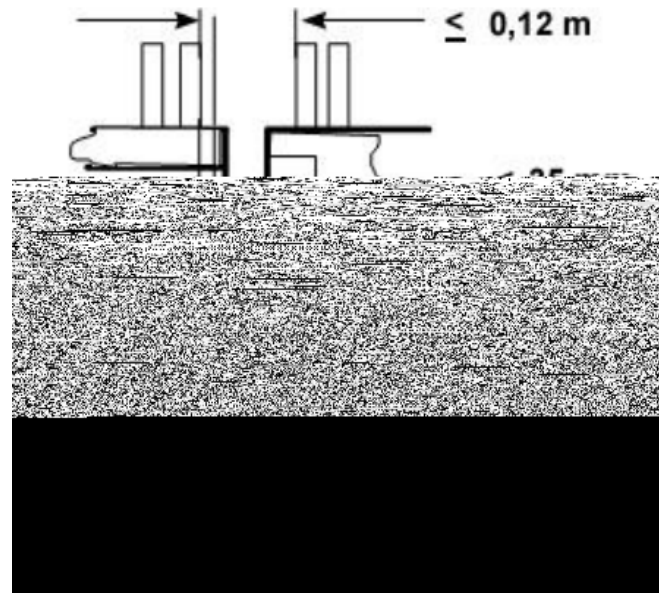
11

()

11.1

11.2

4 5



4

11.2.1

0.15 m

a)

0.20m

0.50m

b)

0.20m

c)

7.7.2.2

14.1.2

11.2.2

35mm

11.2.3



12

12.1

12.2

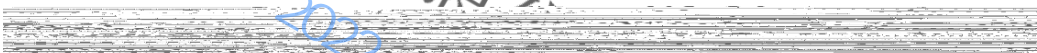
12.2.1

a)

b)

1)

2)



0.63m/s

12.2.2

(12.4.1.2)

12.3

9.7

12.4

12.4.1

12.4.1.1

a)

b)

12.4.1.2

— ()

()

12.4.2 —

12.4.2.1

125

12.4.2.2

12.4.2.3

12.4.2.3.1



12.4.2.3.2

12.4.2.3.3

12.4.2.4 (12.5.1)

12.4.2.5

12.4.2.6

12.4.2.7

12.5

12.5.1

400N

12.5.1.1

14.1.2

12.5.1.2

12.5.2

12.5.1

400N

14.2.1.4

12.6

(92)

105

105

a) [14.2.1.2b)]

b) [14.2.1.2c)]

c) [14.2.1.3d)]

d) [14.2.1.4e)]

e) [14.2.1.5c)]

12.7

14.1.2

12.7.1

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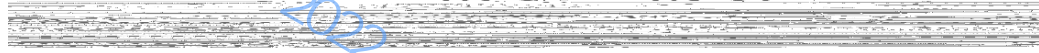
12.7.2

12.7.2.1

a)

b)

c)



b) c)

()

12.7.2.2

a) 12.7.2.1

b)

1)

2)

3)

)
12.7.3

a)

b)

1) ()

2)

3)



12.7.4 12.7.2.2b)2) 12.7.3b)2) 12.7.2.2b)3)

12.7.3b)3) 14.1.2.3

14.1.1 12.7.3a)

12.8

12.8.1 10.4.3.2

12.8.2

12.8.3

12.8.4

a)

b)

c)

14.1.2

12.8.5

14.1.2

12.9

14.1.2

9.5.3

12.10

12.10.1

a)

b)

12.10.2

a)45s

b) 10s 10s

20s

12.10.3

12.10.4

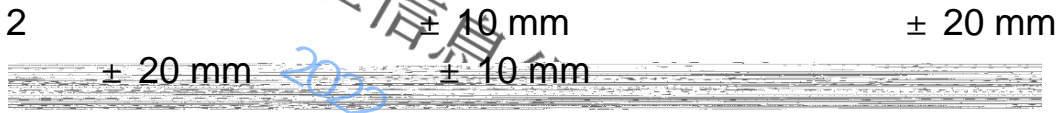
12.11



- a)
- b)
- c)
- d)
- e)

9.7

12.12



13

- 13.1
- 13.1.1
- 13.1.1.1

- a)
- b)

13.1.1.2

13.1.1.1

13.1.1.3

EN 12015 EN 12016

13.1.2

IP2X

13.1.3

(HD384.6.61S1)

6

6

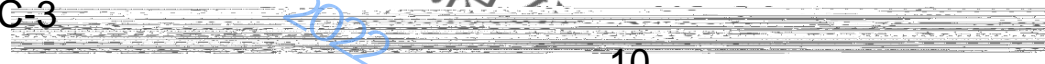
| V | () V | $/M$ |
|-----|---------|------|
| 500 | 250 | 0.25 |
| 500 | 500 | 0.50 |
| 500 | 1000 | 1.00 |

13.1.4



250V

13.1.5
 13.2
 13.2.1
 13.2.1.1 (12.7)
 GB 14048.4
 a) AC-3
 b) DC-3



13.2.1.2
 GBI4048.5
 a) AC-15
 b) DC-13
 13.2.1.3 13.2.1.1 13.2.1.2
 a) b) 13.1.1.1
 a) ()
 b) ()
 13.2.2
 13.2.2.1 13.2.1.2 13.2.1.3

13.2.2.2
 14.1.1.1f)
 13.2.2.3 () 14.1.2.2.3
 ()
 13.2.1.1 13.2.1.2 13.2.2.1
 GB I4048.4 GB I4048.5
 H() H1(3.6)

13.3
 13.3.1
 13.3.2 (13.3.3)
 13.3.3
 13.3.6
 13.3.4 13.3.2 13.3.3
 13.3.5



13.3.6

13.4

13.4.1

a)

b)

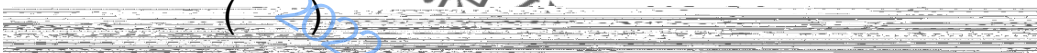
c)

d)

e)

f)

13.4.2 13.4.1



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14.1.2

13.4.3

13.4.4

13.5

13.5.1

13.1.1.2

GB 5023.3 GB

5013.4

| | | | | |
|----------------|------------------|---|----------------|---|
| 13.5.1.1 | GB 5023.3—1997 | 2 | [227IEC01(BV)] | 3 |
| [227IEC02(RV)] | 4 [227IEC05(BV)] | 5 | [227IEC06(RV)] | |
| | () | | | |



GB 5023.1—1997 A

GB 5023.4—1997 2

13.5.1.2

()

13.5.1.3

GB 5013.4—1997

3

[245IEC53(YZ)]

GB

5023.5—1997

5

[227IEC52(RVV)]

GB 5013.4—1997

5

[245IEC66(YCW)]

13.5.1.2

(

)

GB 5023.6

GB 5013.5

13.5.1.4

13.5.1.1

13.5.1.2

13.5.1.3

a)

1)

100VA

2) ()

()

50V

b)

1)

2)

13.5.2

0.75mm²

13.5.3

13.5.3.1

13.5.3.2

13.1.2

13.5.3.3

50V

13.5.3.4

13.5.3.5

13.5.3.6



13.5.4

13.6

13.6.1

13.4

13.6.2

13.6.1

a) 2P+PE 250V

b) GBI4821.1

13.6.3

13.6.3.1

13.6.3.2

()

13.6.3.3 13.6.3.1 13.6.3.2

14

14.1

14.1.1

14.1.1.1

14.1.1.2 ()

H

14.1.2.3

14.1.1.1

a)

b)

c) ()

d)

e)



f)

g)

h)

i)

j)

14.1.1.2

14.1.2.2

14.1.1.3

a)

b)

14.1.2

14.1.2.1

14.1.2.1.1

A()

14.1.2.4

a)

14.1.2.2

12.7

b)

14.1.2.3

1)

14.1.2.2

12.7

2)

14.1.2.2

3)

H

14.1.2.1.2 ()

14.1.2.1.3

(14.2.1.2 14.2.1.4 14.2.1.5)

14.1.2.3

14.1.2.1.4

14.1.2.1.5

14.1.2.1.6

14.1.2.1.7



14.1.2.1.8

14.1.2.2

14.1.2.2.1

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14.1.2.2.2
250V

IP4X
IP4X

500 V

GBI4048.5

a)AC—15

b)DC—13

14.1.2.2.3

IP4X

3mm,

4mm

4mm

IP4X

3mm

14.1.2.2.4

2

mm

14.1.2.2.5

14.1.2.3

14.1.2.3.1

14.1.2.3.2

14.1.2.3.2.1

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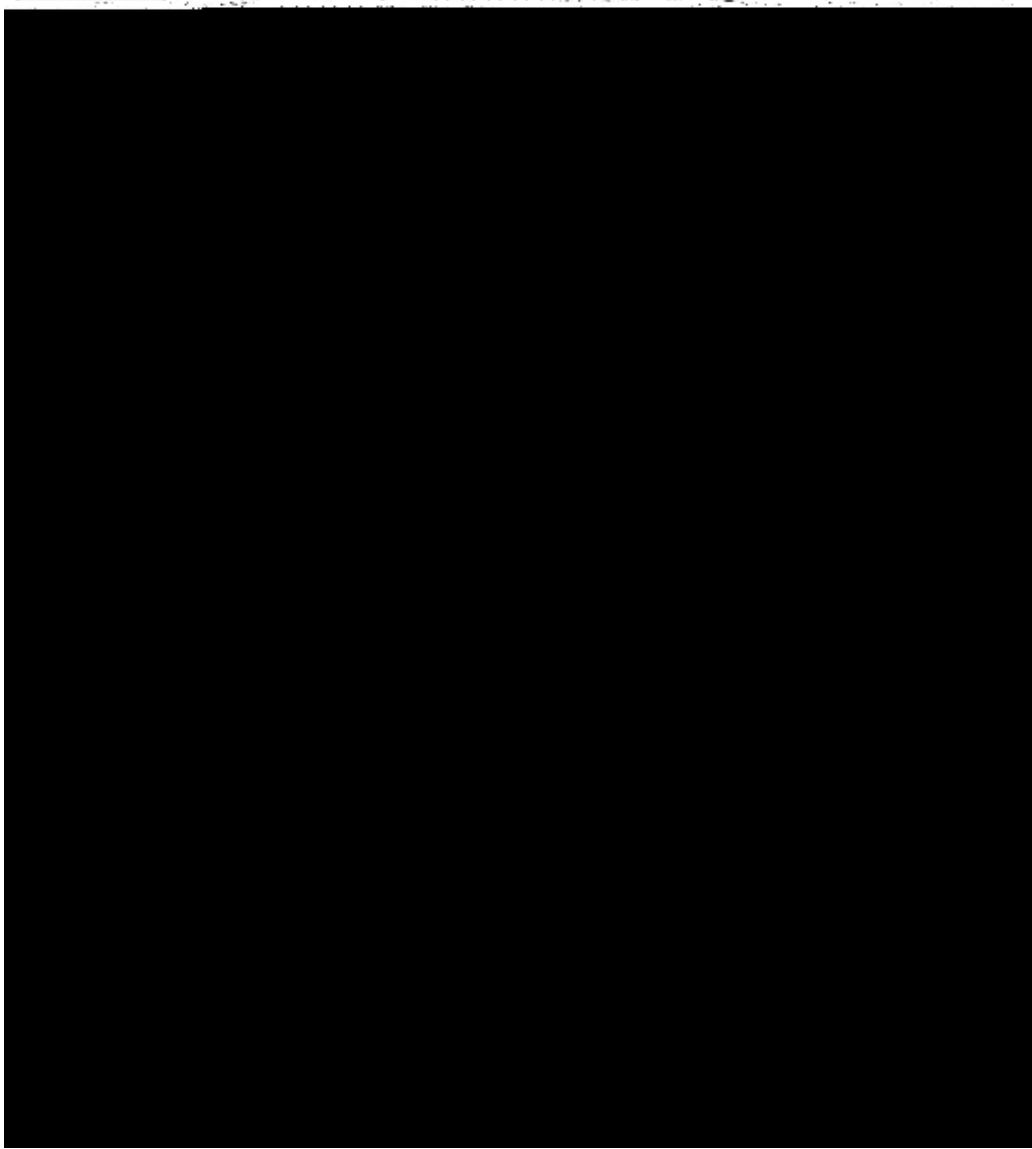
14.1.1

6

()

()

故障1



6

14.1.2.3.2.2



14.1.2.3.2.4

14.1.2.3.2.1

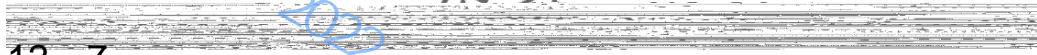
14.1.2.3.2.3

14.1.2.3.2.5

14.1.2.3.3

F6

14.1.2.4



12 7

14.1.2.5

F6.3.1.1

14.2

14.2.1

14.2.1.1

14.2.1.2

7.7.2.2a)

a) (7.7.1)

1)

2) 14.1.2.2

14.1.2.3

3)

14.1.2

4)

b)

0.8m/s

1)

2)

0.8m/s

c)

0.3 m/s

a)

b)

c)

14.1.2

1)9.8.8

2)9.9.11.1 9.9.11.2

3)9.10.5

4)10.5

5)10.4.3.4

d)

e)

0.63m/s

14.2.1.5

7.7.2.2b)

a)

1.65 m

b)

14.1.2

c)

0.3 m/s

d)

e)

f)



i) 114.2.2.1e]

14.2.2

14.2.2.1

a) [5.7.3.4a)]

b) (6.4.5)

c) (8.15)

1 m

1 m

d) [14.2.1.3c)]

e) [14.2.1.5i)]

1 m

(15.2.3.1)

14.2.2.2

14.1.2

14.2.2.3

14.2.3

14.2.3.1

14.2.3.2

8.17.4

14.2.3.2

14.2.3.3

14.2.3.4

2022 07 22 19 27 30m

8.17.4

14.2.4

14.2.4.1

2 s

14.2.4.2

2 s

14.2.4.3

14.2.5

14.2.5.1

14.2.5.2

10

75 kg

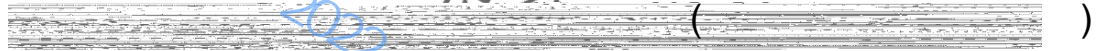


14.2.5.3

- a) ()
- b)
- c)
- d) 7.7.2.1 7.7.3.1

15

15.1



()

15.2

15.2.1

8.2.3

“.....kg.....”

a)10mm

b)7 mm

15.2.2

15.2.3

15.2.3.1

()

“ ”

()



“ ”

15.2.3.2

a)

2 1 0 1 2 3

b)



15.2.4

a)

b)



c)

15.3

a)

b)

c)

d)

15.4

15.4.1

“

——”

“

——

”

15.4.2

()

15.4.3

15.4.3.1

15.4.3.2

15.4.4

“ ”

15.4.5

(6.3.7)

15.5

15.5.1

“

——

”

15.5.2

“ ”

15.5.3

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15.6

a)

b)

c)

15.7



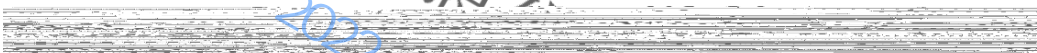
15.16

- a)
- b)
- c)

15.17

F8.1

- a
- b
- c



16

16.1

16.1.1

C()

16.1.2

D

C

16.1.3

- a)
- b)
- c)
- d)
- e)
- f)
- g)
- h)

()

A A1

| | |
|--------|--|
| | |
| 9.11.7 | |
| 9.11.8 | |



16.2

a)

1)

2)

3)

()

4)

(16.1.3)

5)

6)

(GB/T 4728)

b)

1)

[E()]

2)

3)

16.3

16.3.1

a)

b)

c)

a)

(



16.3.3.1

E

16.3.3.2

E

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A

()

A1

A1

A1

5.2.2.2.2

5.7.3.4a)

6.4.5

7.7.3.1

7.7.4.1

7.7.6.2

8.9.2

8.12.4.2

8.15b)

9.5.3

)

9.6.1e)

9.6.2

9.8.8

9.9.11.1

9.9.11.2

9.9.11.3

9.10.5

10.4.3.4

10.5.2.3b)

10.5.3.1b)2)

11.2.1c)

12.5.1.1

12.8.4c)

12.8.5

12.9

13.4.2

14.2.1.2a)2)

企业标准信息

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(

()

()



14.2.1.2a)3)

()

14.2.1.3c)

14.2.1.5b)

14.2.1.5i)

企业标准信息

2022

07

22

19

27

2022

07

22

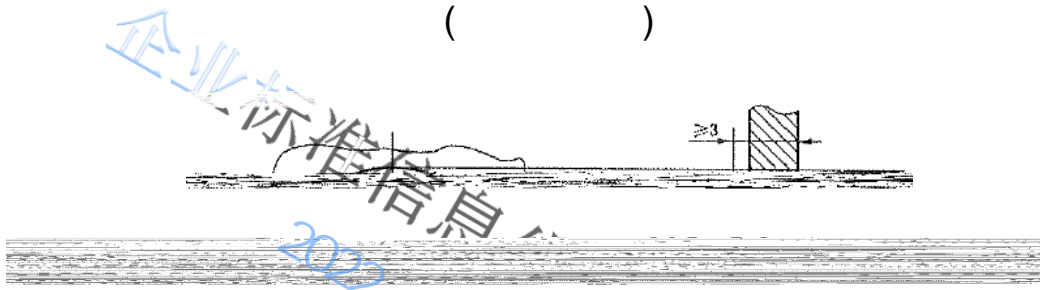
19

27



B

()



B1

2022 07 22 19 27

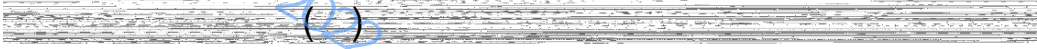


C

()

C1

C2



()

()

(6.2)

C3

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(11.2.3)

(

)

(

)

()

(N)

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()

C4

a)

b)

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C5

(

)

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D

()

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D1

- a)
- b)
- c)
- d)

(C)

D2

- a)
- b)
- c)

(7.7)

(A)

[16.2a)];

- d)

(12.4);

125

- e)
- f)
- 1)

(12.6)

(13.1.3)

- 2)

- g)

(10.5)

- h)

(9.3)

- 1)

—

—

125

- 2)

- 3)

—

—



3) 8.2.2 125 1 1) 2)
1

8.2.2 150
i) 1) (9.9.1 9.9.2) () (9.9.3)

2) 9.9.11.1 9.9.11.2

j) (9.8) (F3)

1)

2) 125

8.2.2 1 1
125

8.2.2¹ 150 125

()

k) () (9.8)

(F3)

()

()



1)

2)

()

L) (10.3 10.4)

1)

()

C5

C3

2)

(10.4.3.2)

8.2.2

1

1

m)

(14.2.3)

n)

(9.10)

o)

9.11

9.11

—
—

9.11.5

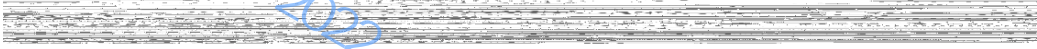
9.11.3



E

()

E1



16.2

E2

16.2

a)

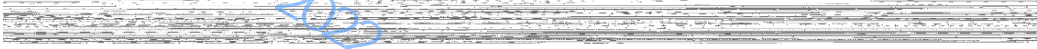
b)



F

()

F0
F0.1
F0.1.1



F0.1.2

F0.1.3
F0.1.4
F0.1.5

F0.1.6

- a) ± 1
 - b) ± 2
 - c) ± 5
 - d) ± 5
 - e) $0.01s$
- F0.2

企业标准信息
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2022 07 22 19 27

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

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F1
F1.1
F1.1.1

F1.1.2

F1.1.3

F1.1.3.1

a)

b)

c)

d) [()]

F1.1.3.2

F1.1.4

F1.2

F1.2.1

a)

7mm 7.7.3.1.1

b)

F1.2.2

7.7.5.1



b) 200V 2A

F1.2.4.2.1

5 10 s
50

0.5s

0.7±0.05

11

F1.2.4.2.2

5 10 s
20

0.5s

300ms
110

95

F1.2.4.2.3

F1.2.4.4

14.1.2.2.3

F1.2.4.5

14.1.2.2

F1.3

F1.3.1

7.7.6.1

7.7.6.2

F1.2

F1.3.2

F1.3.2.1

F1.2.2.2

F1.3.2.2

F1.4

F1.4.1



F1.4.2

a)F0.2

b)

c)

d)

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F2

F3

F3.1

a)

b)

F3.2

F3.2.1

F3.2.2

F3.2.2.1

a)

b)

F3.2.2.2

a)

b)

c)



F3.2.3

F3.2.3.1

a)

b)

F3.2.3.2

a)

b)

1)

2)

F3.2.4

F3.2.4.1

9.9.1

$$h = \frac{v_1^2}{2g_n} + 0.10 + 0.03$$

h—

m

v₁—

m/s

0.10—

m

0.03—

m

$$2K = (P+Q)_1 \times g_n \times h$$

$$(P+Q)_1 = \frac{2K}{g_n \times h}$$

(P+Q)₁—

kg

P—

kg

Q—

kg

K—

J

F3.2.4.2

a)

K F3.2.3.2.a)

2

(kg)

$$(P+Q)_1 = \frac{K}{g_n \times h}$$



b)

1) K_1 F3.2.3.2b)1)

2

(kg)

$$(P+Q)_1 = \frac{K_1}{g_n \times h}$$

2) K_2 F3.2.3.2b)2)

3.5

(kg)

$$(P+Q)_1 = \frac{2K_2}{3.5 \times g_n \times h}$$

K_1 K_2 —

J

F3.2.5

F3.3

F3.3.1

F3.3.1.1

(kg)

(m/s)

(N) 16

(kg)

$0.6g_n$

F3.3.1.2

F3.3.2

F3.3.2.1

a)

b)

c)

d)

a) b)

1)

2)

3)

F3.3.2.2

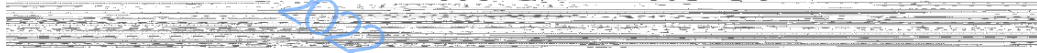


F3.3.2.2.1

- a)
- b)

4m/s

4m/s



F3.3.2.2.2

- a)
- b)

()

F3.3.2.3

F3.3.2.3.1

25%

F3.3.2.3.2

()

F3.3.2.3.1

F3.3.2.4



a)

b)

)

c)

F3.3.3

F3.3.3.1

(P+Q)1= /16

—

F3.3.2.3

N

F3.3.3.2

F3.3.3.2.1

F3.3.3.1

F3.3.3.2.2

F3.3.3.1

F3.3.4

20

F3.3.3.1

F3.4

a)1)

2)

7.5

9.8.4

F3.3.3

±

b)

c)

(

)

d)

e)

F3.5

F3.5.1

F3.5.2



a)F0.2

b)

c)

[F3.4a)];

d)

e)

f)

g)

h)

i)

F4

F4.1

a)

b)

c)

F4.2

F4.2.1

a)

b)

c)

F4.2.2

F4.2.2.1

a)

b) 9.9.11.1

c) 9.9.11.2

d)

F4.2.2.2

[F4.1b)

]



| | | | |
|------------|----|---------------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| F4.2.2.3 | | | |
| F4.2.2.3.1 | 20 | 9.9.1 | 20 |
| F4.2.2.3.2 | 20 | F4.2.2.1b) c) | 9.9.11.1 |
| 9.9.11.2 | | | |
| F4.2.2.3.3 | | 300N | |
| 1 | | | 180 |
| 2 | | | |
| F4.3 | | | |
| F4.3.1 | | | |
| F4.3.2 | | | |
| a)F0.2 | | | |
| b) | | | |
| c) | | | |
| d) | | | |
| e) | | | |
| f) | | | |
| F5 | | | |
| F5.1 | | | |
| a) | | | |
| b) | | | |
| F5.2 | | | |
| a) | | | |
| b) | | | |
| F5.3 | | | |
| F5.3.1 | | | |
| F5.3.1.1 | | | |
| F5.3.1.1.1 | | | |



a)
$$v \leq \sqrt{\frac{Fl}{0.135}} \quad (10.4.1.1.1)$$

1 m/s(10.3.3)

FL——

m

b)

1) Cr/2.5

2) Cr/4

Cr——

k8

F5.3.1.1.2 ()

F5.3.1.2

F5.3.1.2.1

()

()

FO.1.6

F5.3.1.2.2

F5.3.1.2.3 ()

F5.3.1.3 ()

F5.3.1.4

F5.3.1.5

F5.3.2

F5.3.2.1

F5.3.2.2

F5.3.2.2.1

FO.1.6

F5.3.2.2.2

FO.1.6

)

(
1 000 Hz

F5.3.2.2.3

FO.1.6

F5.3.2.2.4

() (5.3.2.1)

F0.1.6

F5.3.2.2.5

0.01 s

F0.1.6

F5.3.2.3

(15 25)

F0.1.6

F5.3.2.4

F5.3.2.5

F5.3.2.6

F5.3.2.6.1

10.4.3.3

F5.3.2.6.2



F5.3.2.7

F5.3.3

F5.3.3.1

F5.3.3.1.1

0.8m/s

F5.3.3.1.2

0.9 gn

F5.3.3.2

F5.3.2.2.2 F5.3.2.2.3 F5.3.2.2.4

F5.3.3.3

(15— 25)

F5.3.3.4

F5.3.3.5

a)

b)

(5 30)min

50

F5.3.3.6

F5.3.3.6.1

“ ”

a)

1.0gn

(n)

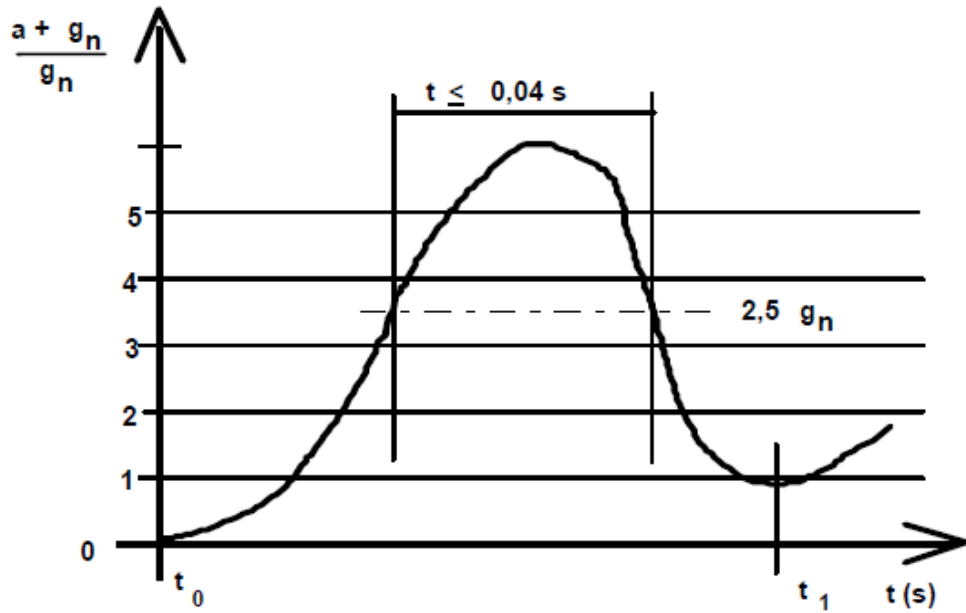
b) 2.5gn

0.04s

F5.3.3.6.2

F5.3.3.7

F5.4
F5.4.1



t_0 —冲击缓冲器瞬间(第1个绝对值最小时); t_1 —第2个绝对值最小时
图F1 减速图

- F5.4.2
a) F0.2
b)
c)
d)
e)
f)
g) ()
F6

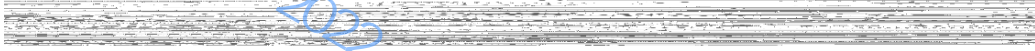
F6.1

- a)
b)
c)
d)



f)
g)
F6.2

a)
b)
F6.3
F6.3.1



F6.3.1.1

a)GB/T 2423.10— 1995 C2
20

0.35mm 5gn 10 Hz 55

Hz

b)GB/T 2423.5— 1995 1
1) 294m/s² 30g
2) 11 ms
3) 2.1 m/s

F6.3.1.2 (GB/T 2423.6)

a)
b)

F6.3.1.2.1

a)
b) 15 g
c) 11 ms

F6.3.1.2.2

a) 10g
b) 16ms
c)1) 1 000+10
2) 2/s

F6.3.2 (GB/T 2423.22)



0'C 65'C()

a)

b)

c)

d)

e)

企业标准信息 (0 65) (4 h)

F6.4

F6.4.1

F6.4.2

a)F0.2

b)

c)GB/T 16935.1

d)

e)

F7

F3 F4 F6

F7.1

a)

b)

c)

a)

b)

c)

F7.2

F7.2.1

(kg)

(m/s)

F7.2.2



- a)
- b) F3 F4 F6

F7.3
F7.3.1

- a)
- b)
- c)

F7.3.2

20

F7.3.2.1

- a)
- b)

F7.3.2.2

)

F7.3.2.3
F7.3.2.3.1

F7.3.2.3.2

20
F7.3.3

- a)

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F7.1b)

4 m/s
4m/s

()

()

20

9.10.1



b)

)

(

c)

d)

1 zo

F7.4

20

F7.5

a)

b)

c)

d)

e)

f)

g)

F7.6

F7.6.1

F7.6.2

a)F0.2

b)

c)

d)

e)

F8

F8.1

—
—
—
—
—

1



—
—

2

1

1.5 m/s²

2m/s

1.5 m/s²

2.5m/s²

2

a
b
c

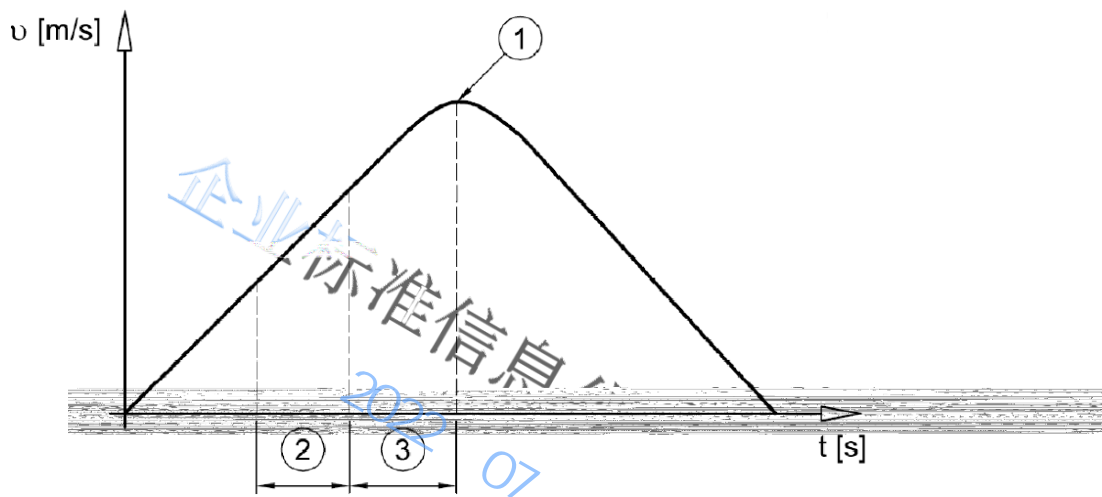
F8.2
F8.2.1
F8.2.2

F8.3
F8.3.1

—
—
—
—
—
—

F2

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—
—
—

F2

F8.3.2

20

—
—

± 20 %

GB/T 24478-2009 4.2.2.4

F8.3.2.1

10

10

5

F8.3.2.2

F8.3.2.3

10



F8.3.2.4
10

F8.3.3

a

b

c

F8.4

19 27
20 %

F8.5

—
—
—
—
—
—
—

F8.6

a F0.2

b

c

d

e

f

g)

/



G

()

G1

G1.1 10.1.1

G1.1.1

Q

G2.2

G1.1.2

G2

G2.1

()

P

G2.2

“

”

“

07

”

8.2

Q G7

3/4

(0.25)

G2.3

F_k

$$F_k = \frac{k_1 g_n (P+Q)}{n}$$

k₁——

G2

n——

G2.4

F_c

$$F_c = \frac{k_1 g_n (P+qQ)}{n} \quad \text{或} \quad F_c = \frac{k_1 g_n qP}{n}$$

q——

G2.5

F_s 0.4g_nQ

2 500k8

F_s 0.6g_nQ

2 500kg

F_s 0.85g_nQ

2 500kS



G2 6

G

a)

b)

c)

()

5

10

G2 7

M

G2 8

WL

(0.25)

G3

G3 1

G

表G1

| 工 况 | 载 荷 和 外 力 | P | Q | G | F _s | F _k 或F _c | M | WL |
|-----|-----------|---|---|---|----------------|--------------------------------|---|----|
|-----|-----------|---|---|---|----------------|--------------------------------|---|----|

G3 2

G4

G4 1

G4 2

(4

K2

(P+Q)

G4 3

G2 6

K3

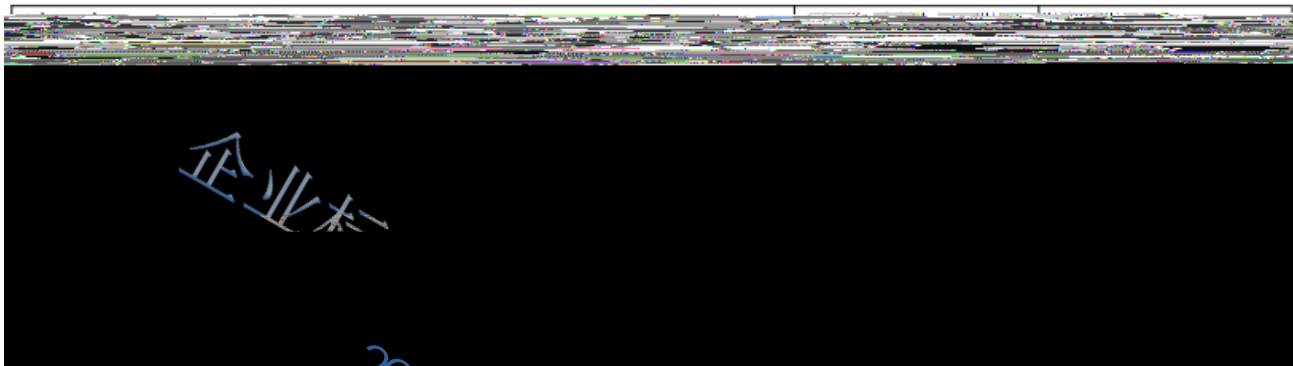
1gn

G4 4

G2



表G2



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G5

G5.1

()

G5.2

G5.2.1

a)

b)

c)

G5.2.2

(G1)

a)

L

b)

c)

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m

M

3E.I

m—

N/mm²

M—

Nmm

W—

mm³

Fb—

N

l—

mm

“

”

G5.2.3

Wx

Wy

(

)



G5.2.4

G5.2.5 9.8.2.2

G5.2.5.1

G5.2.5.2 G2.3

G2.4

G5.3

“ ”

$$\sigma_k = \frac{(F_k + k_3 M)\omega}{A} \quad \text{或} \quad \sigma_k = \frac{1.9(F_c + k_3 M)\omega}{2.7A}$$

| | | | | |
|-------------------|-------------------|--------|----|--------|
| k—— | N/mm ² | MPa | | |
| F _k —— | | | N | G2.3 |
| F _c —— | | | N | G2.4 |
| K ₃ —— | G2 | | | |
| M—— | | | N | |
| A—— | mm ² | | | |
| | G3 | 370MPa | G4 | 520MPa |

$$\lambda = \frac{l_k}{i} \quad \text{和} \quad l_k = 1.2l$$

| | | | |
|-------------------|-----|---------------|------------|
| l _k —— | mm | | |
| i—— | mm | | |
| | Rm | 370 MPa | |
| 20 | 60 | 0.000 129 20× | 1.89 +1 |
| 60< | 85 | 0.000 046 27× | 2.14 +1 |
| 85< | 115 | 0.000 017 11× | 2.35 +1.04 |
| 115< | 250 | 0.000 168 87× | 2.00 |



Rm 520MPa

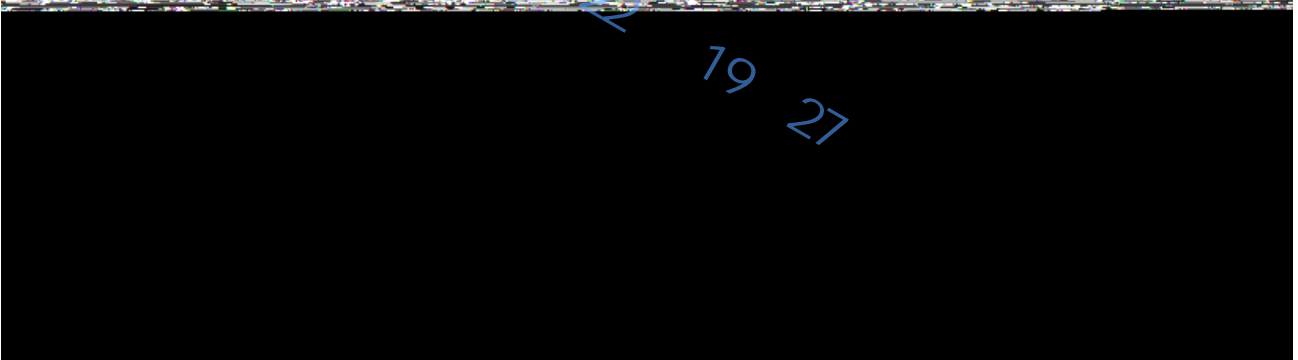
| | | | |
|-----|-----|---------------|-------------|
| 20 | 50 | 0.000 082 40x | 2.06 +1.021 |
| 50x | 70 | 0.000 018 95x | 2.41 +1.05 |
| 70x | 89 | 0.000 024 47x | 2.36 +1.03 |
| 89x | 250 | 0.000 253 30x | 2.00 |

370MPa 520MPa

$$\omega_R = \left[\frac{\omega_{520} - \omega_{370}}{520 - 370} \times (R_m - 370) \right] + \omega_{370}$$

表G3 79

| λ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | λ |
|-----------|------|------|------|------|------|------|------|------|------|------|-----------|
| 20 | 1.04 | 1.04 | 1.04 | 1.05 | 1.05 | 1.06 | 1.06 | 1.07 | 1.07 | 1.08 | 20 |
| 30 | 1.08 | 1.09 | 1.09 | 1.10 | 1.10 | 1.11 | 1.11 | 1.12 | 1.13 | 1.13 | 30 |
| 40 | 1.14 | 1.14 | 1.15 | 1.16 | 1.16 | 1.17 | 1.18 | 1.19 | 1.19 | 1.20 | 40 |
| 50 | 1.21 | 1.22 | 1.23 | 1.23 | 1.24 | 1.25 | 1.26 | 1.27 | 1.28 | 1.29 | 50 |
| 60 | 1.30 | 1.31 | 1.32 | 1.33 | 1.34 | 1.35 | 1.36 | 1.37 | 1.39 | 1.40 | 60 |
| 70 | 1.41 | 1.42 | 1.44 | 1.45 | 1.46 | 1.48 | 1.49 | 1.50 | 1.52 | 1.53 | 70 |
| 80 | 1.55 | 1.56 | 1.58 | 1.59 | 1.61 | 1.62 | 1.64 | 1.66 | 1.68 | 1.69 | 80 |
| 90 | 1.71 | 1.73 | 1.74 | 1.76 | 1.78 | 1.80 | 1.82 | 1.84 | 1.86 | 1.88 | 90 |
| 100 | 1.90 | 1.92 | 1.94 | 1.96 | 1.98 | 2.00 | 2.02 | 2.05 | 2.07 | 2.09 | 100 |
| 110 | 2.11 | 2.14 | 2.16 | 2.18 | 2.21 | 2.23 | 2.27 | 2.31 | 2.35 | 2.39 | 110 |
| 120 | 2.43 | 2.47 | 2.51 | 2.55 | 2.60 | 2.64 | 2.68 | 2.72 | 2.77 | 2.81 | 120 |
| 130 | 2.95 | 2.99 | 2.94 | 2.99 | 2.99 | 2.99 | 2.99 | 2.97 | 2.99 | 2.96 | 130 |

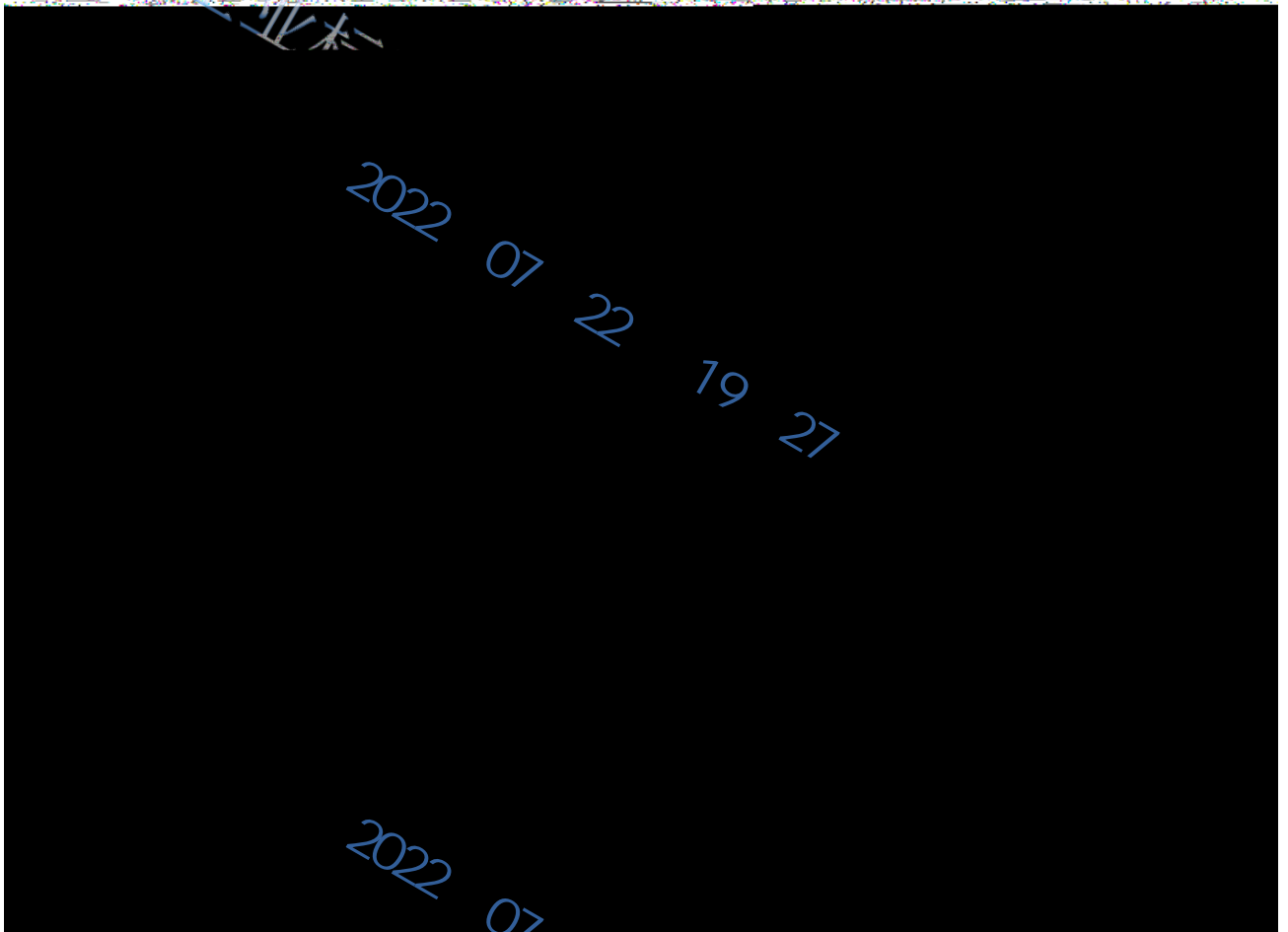


| | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|-----|
| 220 | 0.17 | 0.25 | 0.22 | 0.40 | 0.47 | 0.55 | 0.62 | 0.70 | 0.79 | 0.96 | 220 |
|-----|------|------|------|------|------|------|------|------|------|------|-----|



表G4

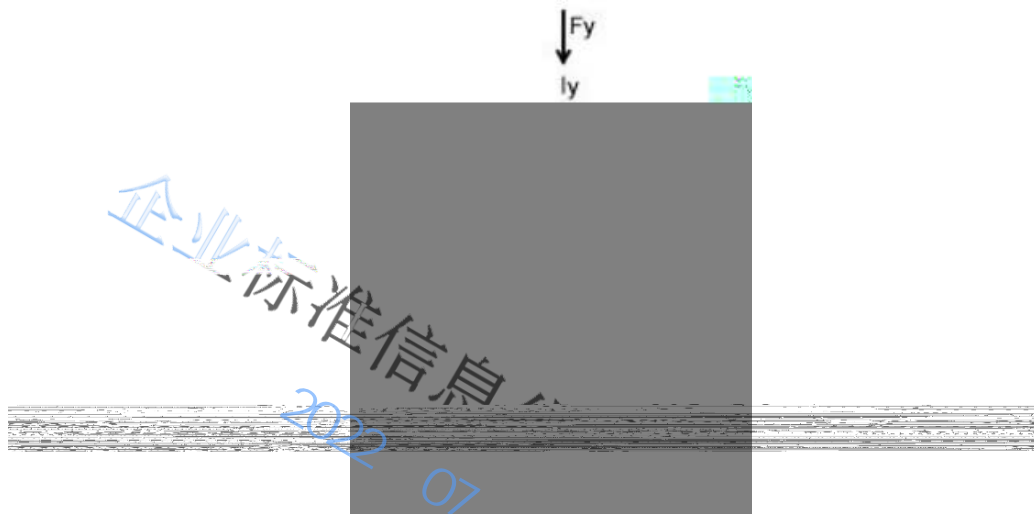
| λ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | λ |
|-----------|------|------|------|------|------|------|------|------|------|------|-----------|
| 20 | 1.06 | 1.06 | 1.07 | 1.07 | 1.08 | 1.08 | 1.09 | 1.09 | 1.10 | 1.11 | 20 |
| 30 | 1.11 | 1.12 | 1.12 | 1.13 | 1.14 | 1.15 | 1.15 | 1.16 | 1.17 | 1.18 | 30 |
| 40 | 1.19 | 1.19 | 1.20 | 1.21 | 1.22 | 1.23 | 1.24 | 1.25 | 1.26 | 1.27 | 40 |



G5.4

m x+ y
perm

x —X Mpa
y —Y Mpa
perm — Mpa 10 1. 2 1



G5.5

T

F——

Mpa

Fx——

N

C——

mm

G1

G5.6

G7

G5.7

$$\delta_y = 0.7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \quad \text{Y—Y导向面}$$

$$\delta_x = 0.7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \quad \text{X—X导向面}$$

x——X

mm

y——Y

mm

Fx——X

N

Fy——Y

N

E ——

Mpa

Ix—— X

mm⁴

Iy

mm⁴

——Y

G6

T

10 1. 2 2

10 1. 1



1Q 1. 1

G7

()

(Q)

Dx—X

Dy—Y

xc, yc—

xs, ys—

xp, yp—

xcp, ycp—

S—

C—

P—

Q—

—

1, 2, 3, 4—

xi, yi—

n—

h—

xQ yQ—

xcQ ycQ—

C

S

P

P

Q

C

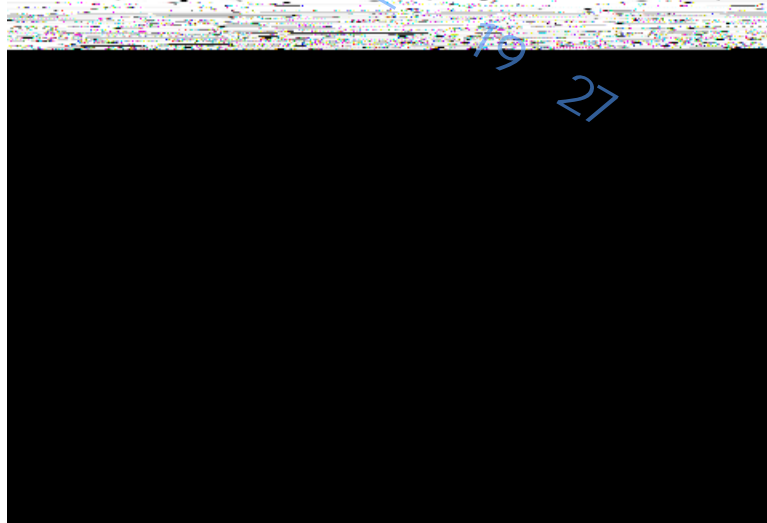
Q

X

Y

DX

y



G7. 1
 G7. 1. 1
 G7. 1. 1. 1

a)

Y

$$F_x = \frac{k_1 \cdot g_n \cdot (Q \cdot x_Q + P \cdot x_P)}{n \cdot h}, \quad M_y = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

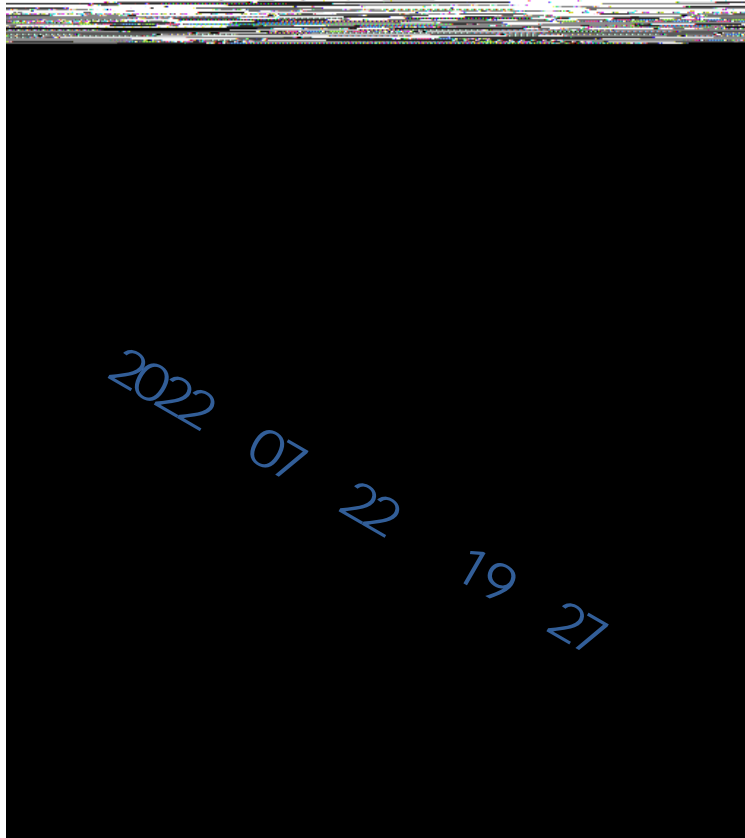
b)

X

$$F_y = \frac{k_1 \cdot g_n \cdot (Q \cdot y_Q + P \cdot y_P)}{\frac{n \cdot h}{2}}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

X (G3)

$$v = v + D_x$$

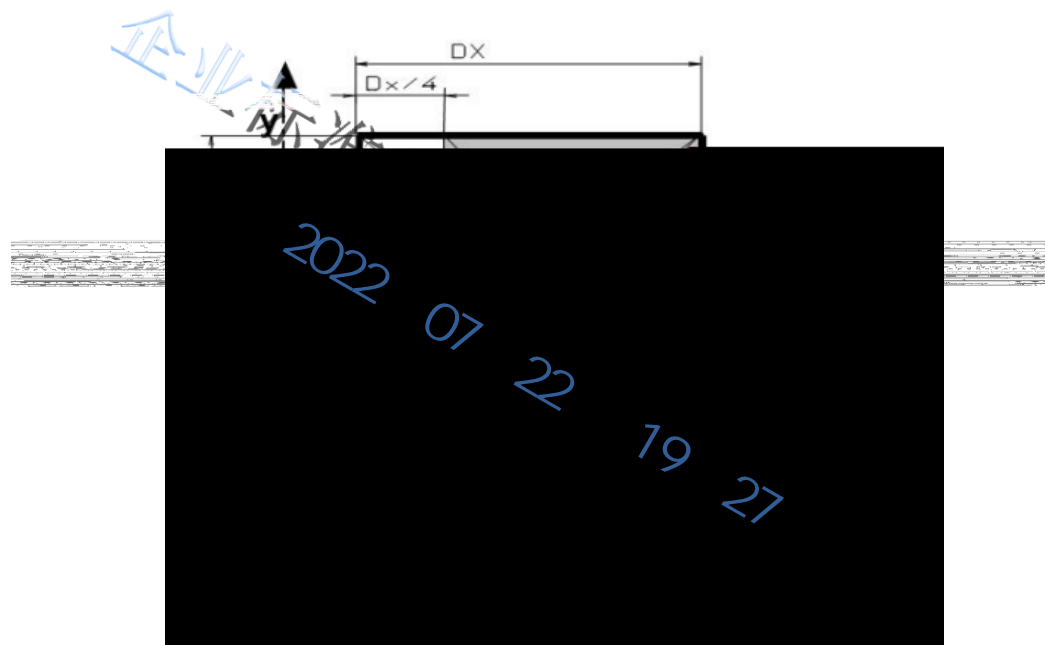


Y (G4)



$$x_Q = x_c$$

$$y_Q = y_c + \frac{D_y}{8}$$



G7. 1. 1. 2

$$\frac{k_1 \cdot g_n \cdot (P+Q)}{\dots} \quad (F_k + k_3 \cdot M) \cdot \omega$$

G7. 1. 1. 3

1)

$$\sigma = \sigma + \sigma < \sigma_{\dots}$$

G7. 1. 1. 4

2)

$$\sigma = \frac{1,85 \cdot F_x}{\dots} < \sigma$$

G7. 1. 1. 5

3)

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{\dots} \leq \delta_{norm} \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{\dots} \leq \delta_{norm}$$

G 1. 2

G7. 1. 2. 1

a)

Y



[Redacted]

b) X

$$F = \frac{k_2 \cdot g_n \cdot [Q \cdot (y_Q - y_s) + P \cdot (y_p - y_s)]}{\dots} \quad M = \frac{3 \cdot F_y \cdot l}{\dots} \quad \sigma = \frac{M_x}{\dots}$$

X (G7. 1. 1. 1)
Y (G7. 1. 1. 1)

G7. 1. 2. 2

“ ”

G7. 1. 2. 3

4)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7. 1. 2. 4

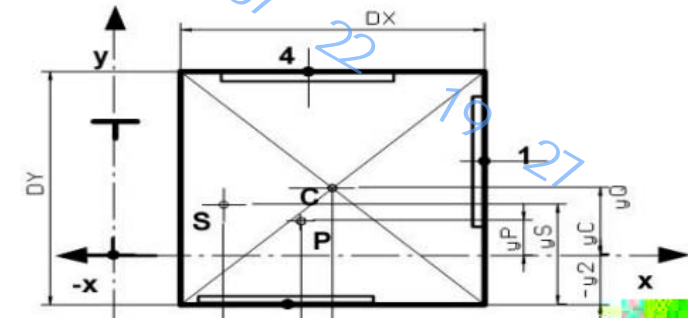
5)

$$\sigma_F = \frac{1,85 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7. 1. 2. 5 6)

[Redacted]

G7. 1. 3 (G5)

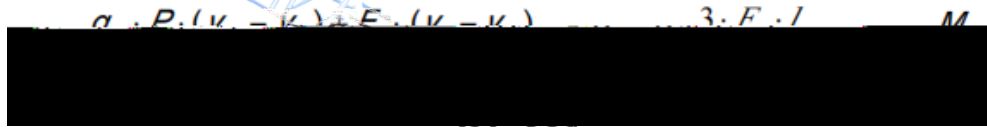


G7. 1. 3 1

a) Y



b) X



G7. 1. 3 2



G7. 1. 3 3

7(

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$



G7. 1. 3 4

$$\sigma_F = \frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7. 1. 3 5

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7. 2

G7. 2 1

G7. 2 1. 1

a) Y

$$F_x = \frac{k_1 \cdot g_n \cdot (Q \cdot x_Q + P \cdot x_P)}{n \cdot h}, \quad M_y = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

b) X

$$F_y = \frac{k_1 \cdot g_n \cdot (Q \cdot y_Q + P \cdot y_P)}{\frac{n}{2} \cdot h}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

X (G6)

P Q

Q X



$$x_Q = \frac{D_x}{8}$$

$$y_Q = 0$$

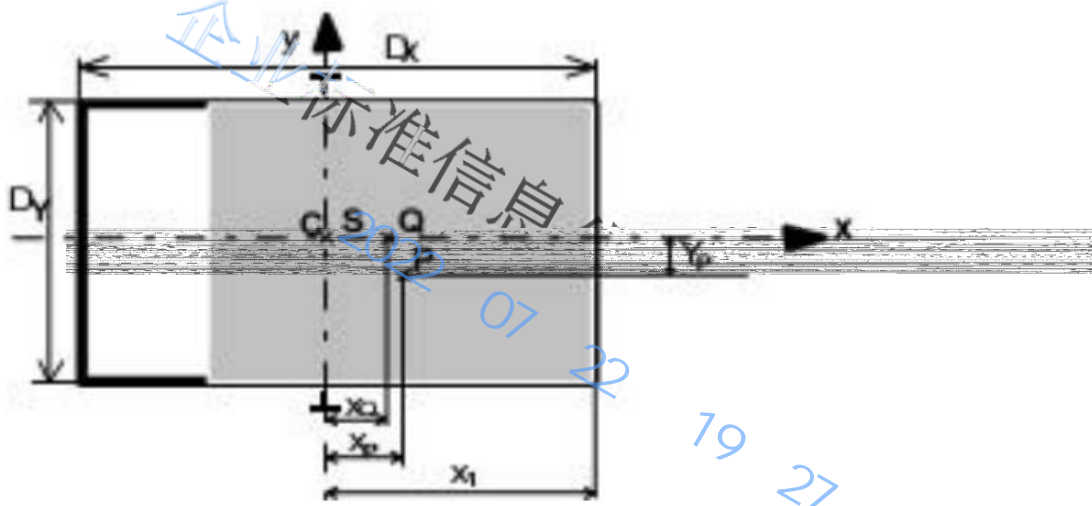
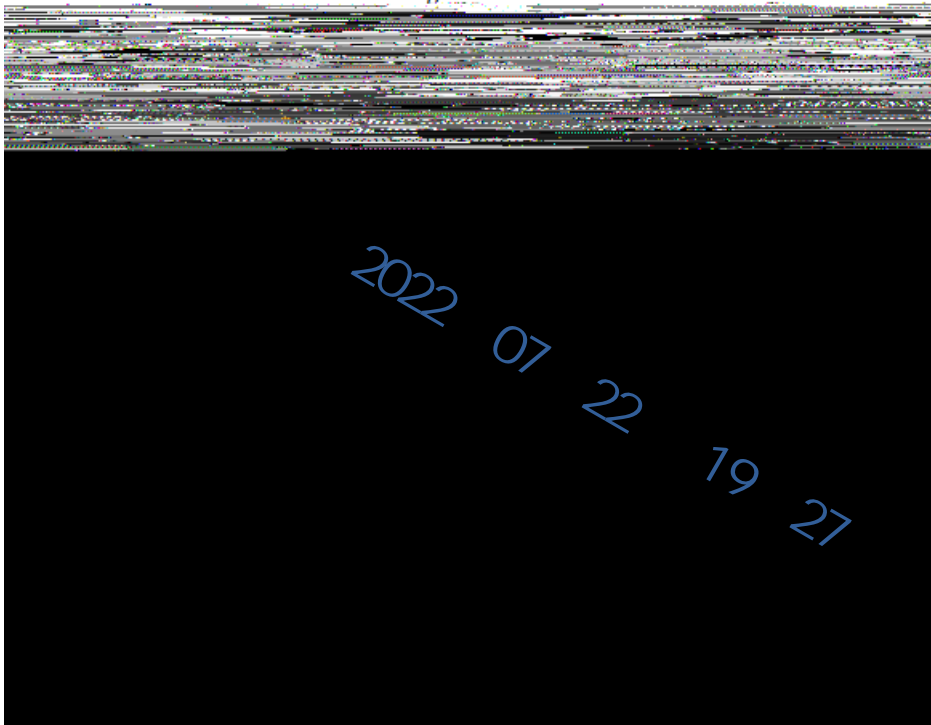


图 G6
Y (7)
 $x_0 = 0$



G7.2 1.2

$$F_k = \frac{k_1 \cdot g_n \cdot (P + Q)}{2}, \sigma_k = \frac{(F_k + k_3 \cdot M)}{A} \cdot \omega$$

G7.2 1.3 8)



$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{F_k + k_3 \cdot M}{A} \leq \sigma_{perm}$$

$$\sigma = \sigma_k + 0,9 \cdot \sigma_m \leq \sigma_{perm}$$

G7.2.1.4

9)



G7.2.1.5

10)

$$\delta_y = 0,7 \frac{F_x \cdot l^3}{EI} \leq \delta_{perm} \quad \delta_x = 0,7 \frac{F_y \cdot l^3}{EI} \leq \delta_{perm}$$

G7.2.2

G7.2.2.1

a)

Y

$$k_2 \cdot g_p \cdot (Q \cdot x_Q + P \cdot x_P) \dots 3 \cdot F_y \cdot l \quad M_y$$

b)

X

$$F_y = \frac{k_2 \cdot g_n \cdot (Q \cdot y_Q + P \cdot y_P)}{\frac{n \cdot h}{2}}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

X (G7.2.1.1)

Y (G7.2.1.1)

G7.2.2.2

"

"

G7.2.2.3

11)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.2.2.4

12)

$$\sigma_F = \frac{1,85 \cdot F_x}{c^2} \leq \sigma_{perm}$$

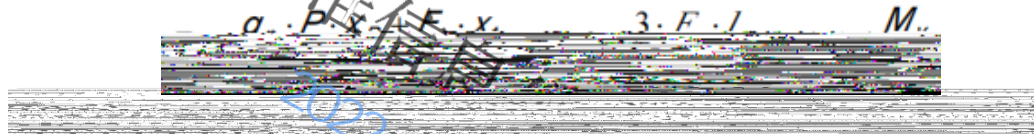
G7.2.2.5 13)

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.2.3

G7.2.3.1

a)



b)

$$F_y = \frac{g_n \cdot P \cdot y_P + F_s \cdot y_1}{h}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

G7.2.3.2

“

G7.2.3.3

14)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.2.3.4

$$\sigma_F = \frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.2.3.5

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.3

G7.3.1

G7.3.1.1

a)

Y

$$F_x = \frac{k_1 \cdot g_n \cdot (Q \cdot x_Q + P \cdot x_P)}{n \cdot h}, \quad M = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

b)

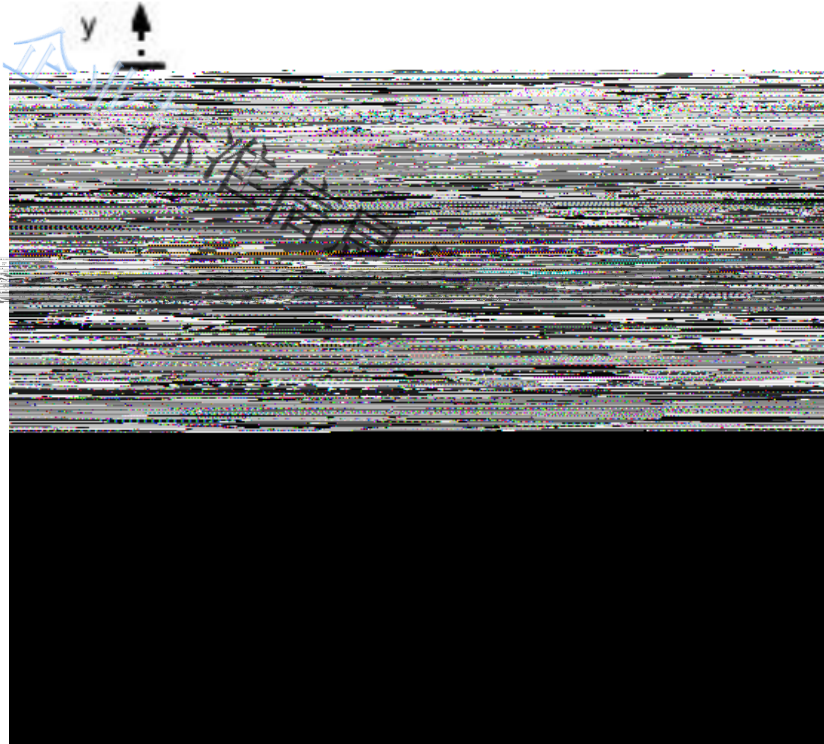
X

$$F_y = \frac{k_1 \cdot g_n \cdot (Q \cdot y_Q + P \cdot y_P)}{\frac{n}{2} \cdot h}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

X (G8)



$$x_Q = x_C + \frac{D_x}{8}$$
$$y_P = y_C = y_Q = y_S = 0$$



Y (G)

$$y_Q = \frac{D_y}{8}$$

$$x_C = x_Q$$



G7.3 1.2

$$k \cdot q \cdot (P+Q) \quad (F+k \cdot M \cdot q)$$

G7.3 1.3

15)

$$\sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{F+k_3 \cdot M}{A} \leq \sigma_{perm}$$

$$\sigma_c = \sigma_k + 0,9 \cdot \sigma_m \leq \sigma_{perm}$$

G7.3 1.4

16)

$$185 \cdot F$$

G7.3 1.5

17)

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm}, \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.3 2

G7.3 2.1

a)

Y

$$F_x = \frac{k_2 \cdot g_n \cdot [Q \cdot (x_Q - x_S) + P \cdot (x_P - x_S)]}{n \cdot h}, \quad M_y = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

b)

X

$$k_2 \cdot g_n \cdot [Q \cdot (v_Q - v_S) + P \cdot (v_P - v_S)] \quad 3 \cdot F_x \cdot l \quad M$$

X (G7.2 1.1)

Y (G7.2 1.1)

G7.3 2.2

“ ”

G7.3 2.3

18)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.3.2.4 19)

$$\sigma_F = \frac{1,85 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.3.2.5 20)



G7.3.3 (G10)

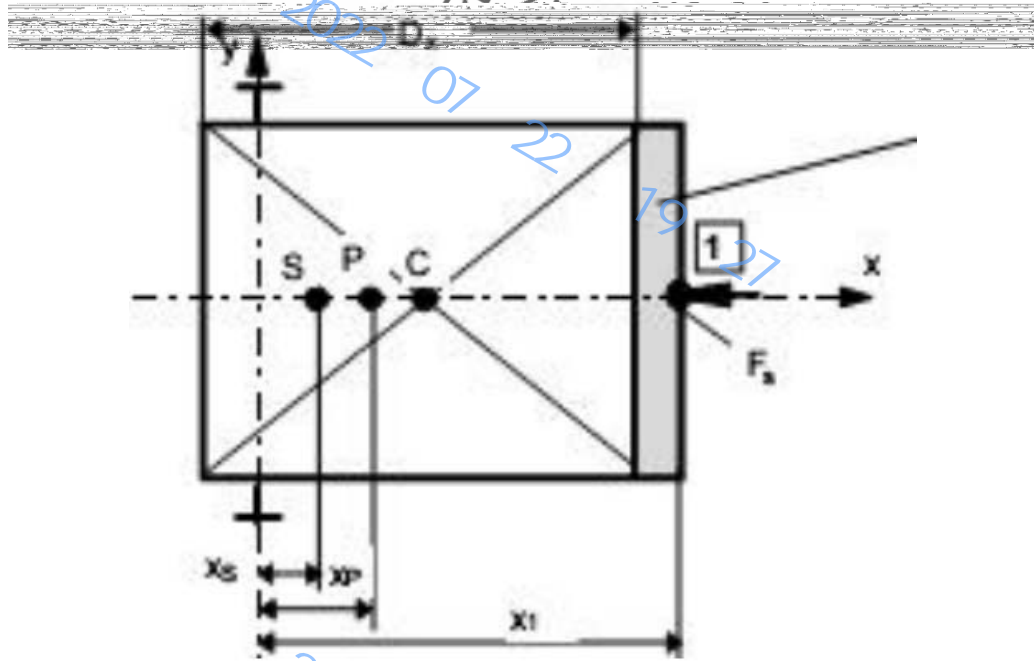


图 G10

G7.3.3.1

a) Y

$$\alpha \cdot P \cdot (x_p - x_s) + F \cdot (x - x_s) - 3 \cdot F \cdot l \quad M$$

b) X

$$F_y = 0$$

G7.3.3.2

“ ”

G7.3.3.3 21)

$$\sigma_m = \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.3.3.4

$$\sigma_F = \frac{1,85 \cdot F_x}{c^2} \leq \sigma_{perm}$$

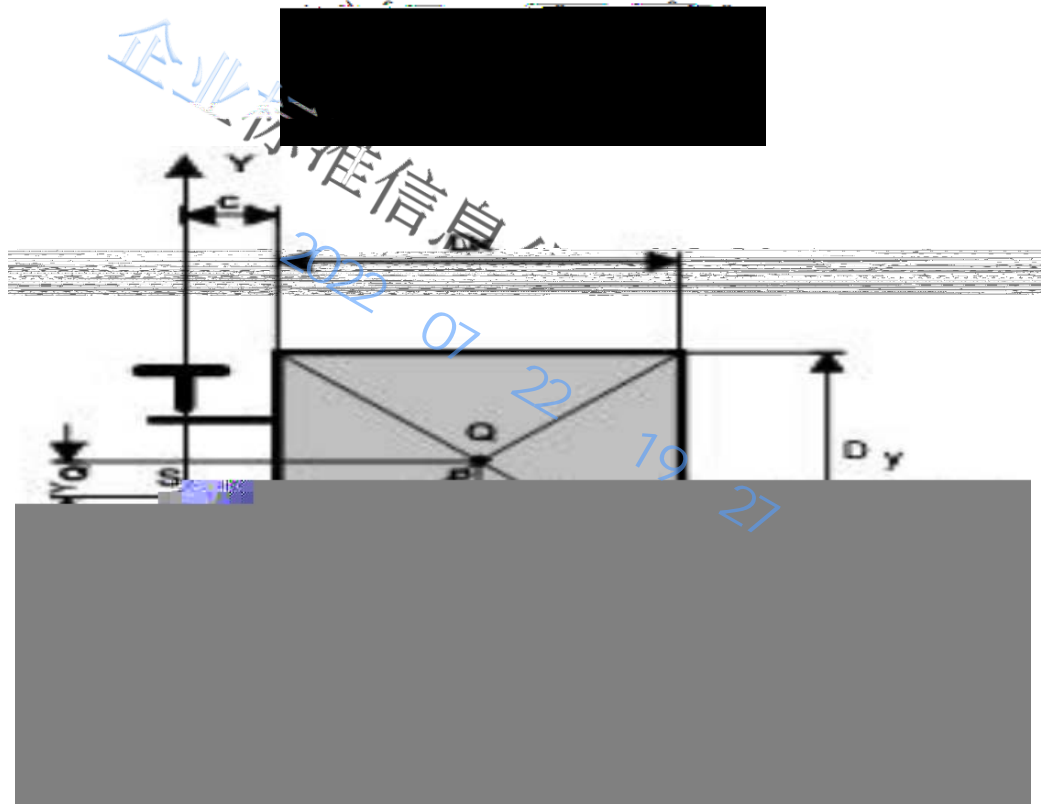
G7.3.3.5

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0$$

G7.4



Y (G12)



G7.4.1.2

$$F_k = \frac{k_1 \cdot g_n \cdot (P+Q)}{n}, \quad \sigma_k = \frac{(F_k + k_3 \cdot M) \cdot \omega}{A}$$

G7.4.1.3

22)

$$\sigma_m = \sigma_v + \sigma_v \leq \sigma_{norm}$$

G7.4.1.4

23)



G7.4.1.5 24)

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm}, \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.4.2

G7.4.2.1

a)

$$F_x = \frac{k_2 \cdot g_n \cdot [Q \cdot (x_Q - x_S) + P \cdot (x_P - x_S)]}{n \cdot h}, M_y = \frac{3 \cdot F_x \cdot l}{16}, \sigma_y = \frac{M_y}{W_y}$$

b)

$$k_2 \cdot g_n \cdot [Q \cdot (v_Q - v_S) + P \cdot (v_P - v_S)] \quad 3 \cdot F_x \cdot l \quad M$$

X (G7.4.1.1)

Y (G7.4.1.1)

G7.4.2.2

“ ”

G7.4.2.3

25)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.4.2.4

26)

$$\sigma_F = \frac{1,85 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.4.2.5

27)

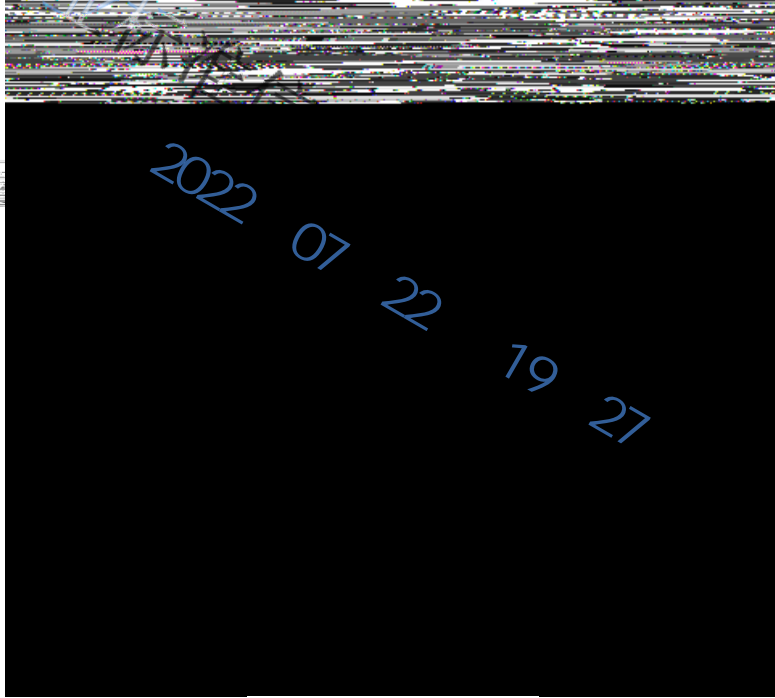
$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm}, \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.4.3



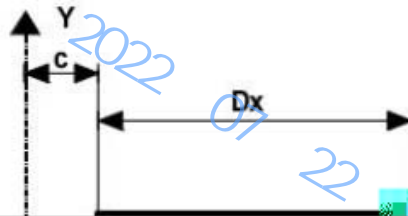
$$x_p > 0 \quad y_p = 0$$

$$x_1 > 0 \quad y_1 = \frac{D_y}{2}$$



$$x_p > 0 \quad y_p = 0$$

$$x_2 > c + D_x \quad y_2 > 0$$



G7.4.3.1

a)

Y

$$F_x = \frac{g_n \cdot P \cdot x_p + F_s \cdot x_i}{n \cdot h}, \quad M_y = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

b)

X

$$F_y = \frac{g_n \cdot P \cdot y_p + F_s \cdot y_i}{\frac{n}{2} \cdot h}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

G7.4.3.2

“ ”

G7.4.3.3

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$\sigma = \sigma_m + \frac{k_3 \cdot M}{A} \leq \sigma_{perm}$$

G7.4.3.4

$$\sigma_F = \frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.4.3.5

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_x} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm}$$

G7.5

G7.5.1

G7.5.1.1

a)

Y

$$k_1 \cdot g_n \cdot (Q \cdot x_Q + P \cdot x_P) \quad 3 \cdot F_y \cdot l \quad M_x$$

b)

X

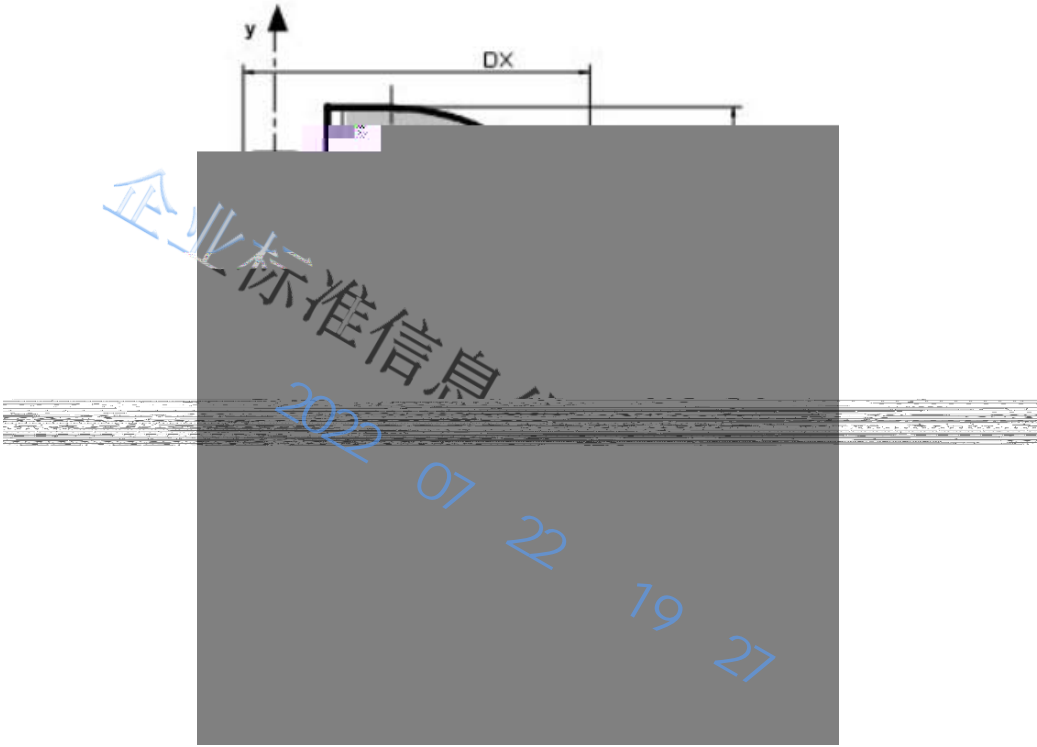
$$F_y = \frac{k_1 \cdot g_n \cdot (Q \cdot y_Q + P \cdot y_P)}{\frac{n}{2} \cdot h}, \quad M_x = \frac{3 \cdot F_y \cdot l}{16}, \quad \sigma_x = \frac{M_x}{W_x}$$

X (G15)

xQ

3/4

yQ 0



Y (G16)
3/4
xQ yQ

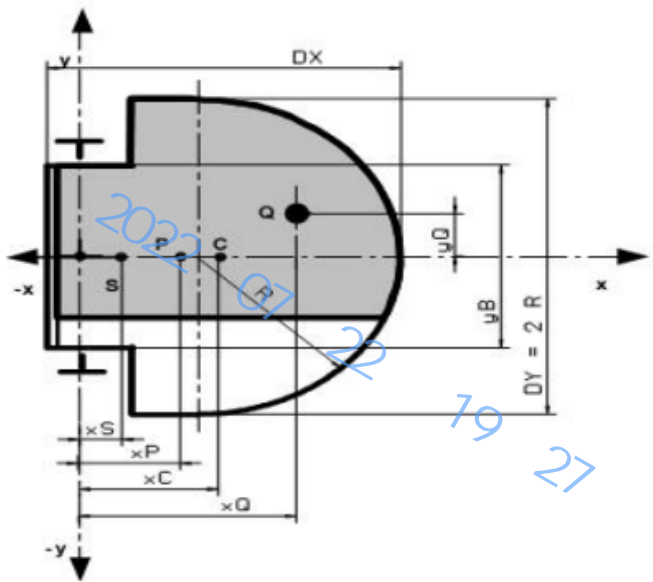


图 G16

G7. 5. 1. 2



G7. 5. 1. 3

29)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$



$$\sigma = \sigma_m + \frac{F_k + k_3 \cdot M}{A} \leq \sigma_{perm}$$

$$\sigma_c = \sigma_k + 0,9 \cdot \sigma_m \leq \sigma_{perm}$$

G7.5.1.4 30)

$$\frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.5.1.5 31)

$$\delta_x = 0,7 \frac{F_x \cdot \dot{P}}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot \dot{P}}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$

G7.5.2

G7.5.2.1

a) Y

$$k_2 \cdot q_n \cdot [Q \cdot (x_D - x_S) + P \cdot (x_D - x_C)] \quad 3 \cdot F \cdot l \quad M_y$$

b) X

$$k_2 \cdot q_n \cdot [Q \cdot (v_D - v_S) + P \cdot (v_D - v_C)] \quad 3 \cdot F \cdot l \quad M$$

X (G7.5.1.1)

Y (G7.5.1.1)

G7.5.2.2

“ ”

G7.5.2.3 32)

$$\sigma_m = \sigma_x + \sigma_y \leq \sigma_{perm}$$

$$k_3 \cdot M$$

G7.5.2.4 33)

$$\sigma_F = \frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

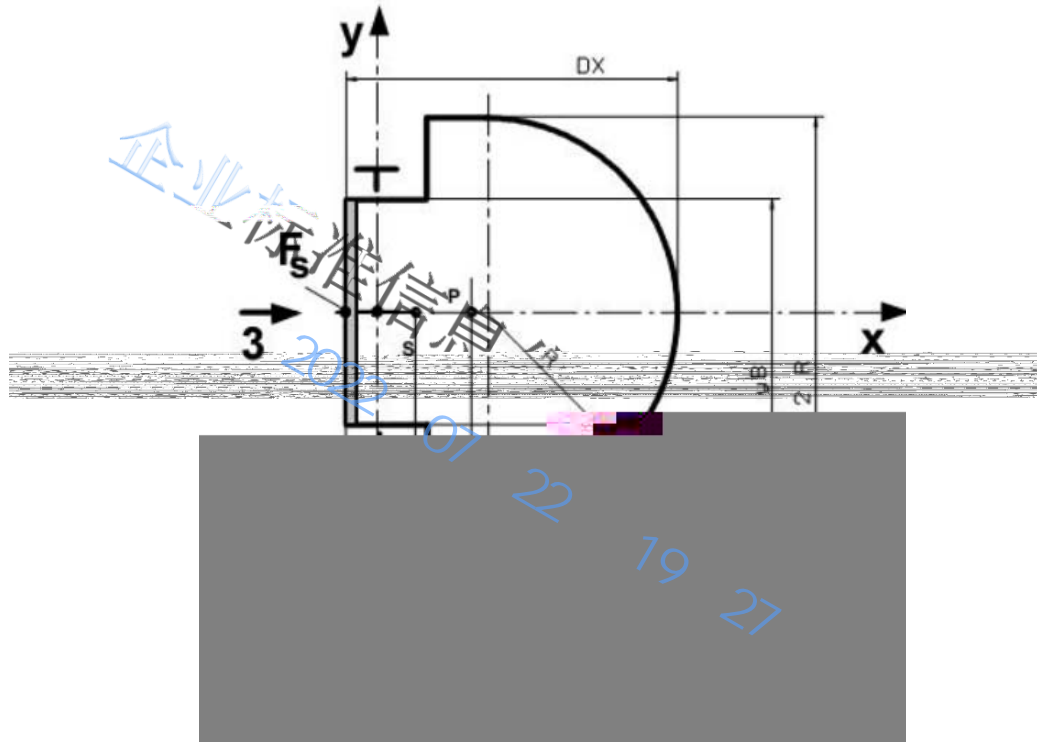
G7.5.2.5 34)

$$\delta_x = 0,7 \frac{F_x \cdot \dot{P}}{48 \cdot E \cdot I_y} \leq \delta_{perm} \quad \delta_y = 0,7 \frac{F_y \cdot \dot{P}}{48 \cdot E \cdot I_x} \leq \delta_{perm}$$



G7.5.3

(G17)



G7.5.3.1

a)

Y

$$F_x = \frac{g_n \cdot P \cdot (x_P - x_S) - F_s \cdot (x_i + x_S)}{n \cdot h}, \quad M_y = \frac{3 \cdot F_x \cdot l}{16}, \quad \sigma_y = \frac{M_y}{W_y}$$

b)

X

$$F_y = 0$$

G7.5.3.2

“

”

G7.5.3.3

$$\sigma_m = \sigma_y \leq \sigma_{perm}$$

$$k_3 \cdot M$$

G7.5.3.4

35)

$$\sigma_F = \frac{185 \cdot F_x}{c^2} \leq \sigma_{perm}$$

G7.5.3.5

$$\delta_x = 0,7 \frac{F_x \cdot l^3}{48 \cdot E \cdot I_y} \leq \delta_{perm}, \quad \delta_y = 0$$

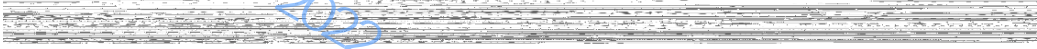


(H)

14 1. 1. 1

14 1. 1. 1

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Hl 14 1. 1. 1e)
“ ”

()

Hl 3 1 3 6

14 1. 2 4

GB/T 16856

14 1. 2 3

GB 16895. 3

()

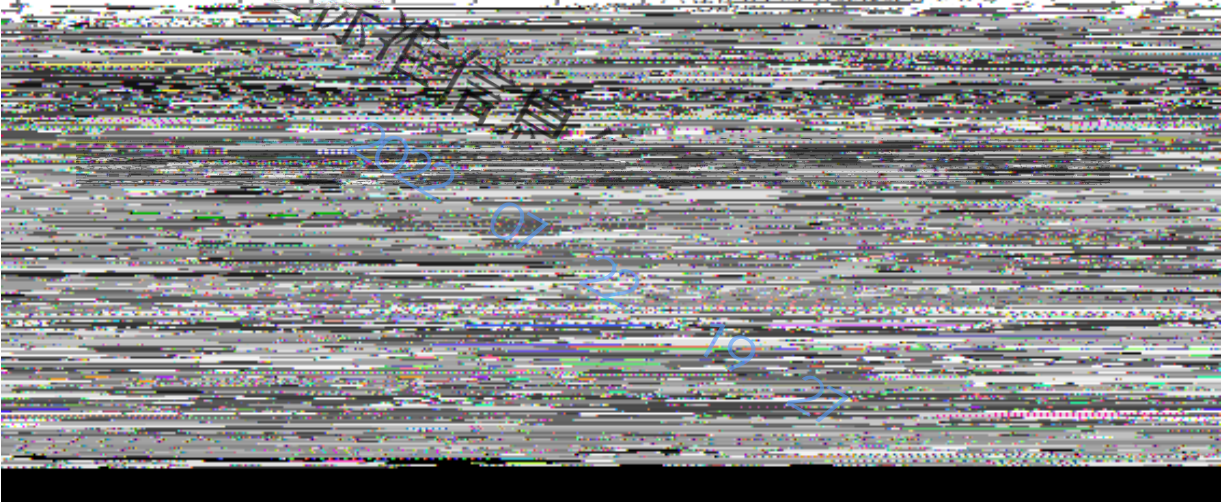


HI

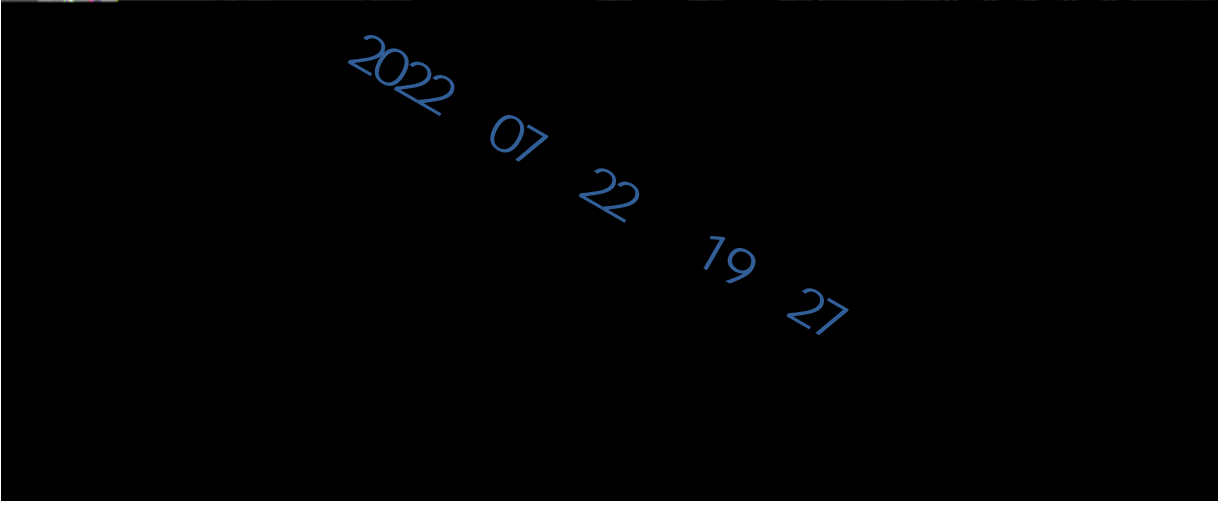
| 元 件 | 可排除故障 | | | | | 条 件 | 备 注 |
|----------|-------|-----|--------------|--------------|------------|--|-----|
| | 断 路 | 短 路 | 改 为 更 高 值 | 改 为 更 低 值 | 改 变 功 能 | | |
| 1 无源元件 | | | | | | | |
| 1.1 定值电阻 | 否 | (a) | | (a) | | (a)对根据国家标准进行轴向连接,且由涂漆或封闭处理的电阻膜制成的薄膜电阻器和由漆包线封闭保护的单层绕制的线绕电阻器 | |
| 1.2 可变电阻 | 否 | | | | | | |



| | | | | | | | |
|----------|---|---|---|---|---|--|-----------------|
| 2.5 混合电路 | 否 | 否 | 否 | 否 | 否 | | |
| 2.6 集成电路 | 否 | 否 | 否 | 否 | 否 | | 功能改变成振荡,与门变成或门等 |
| 3 其他元件 | | | | | | | |

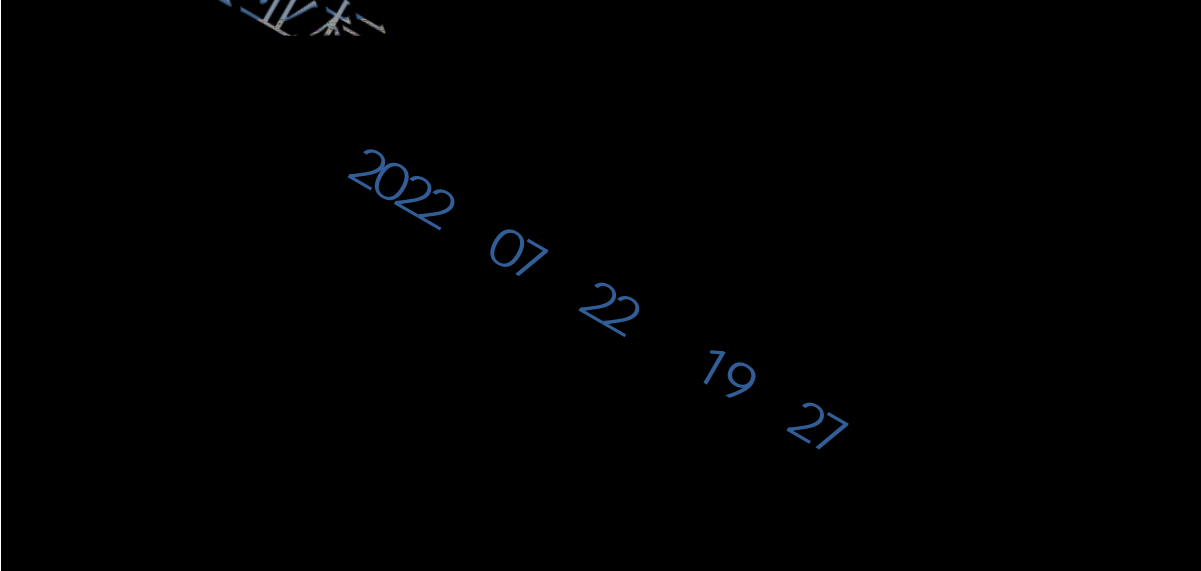


| | | | | | | | |
|--|--|--|--|--|--|--|--------|
| | | | | | | | 短路包括初级 |
|--|--|--|--|--|--|--|--------|

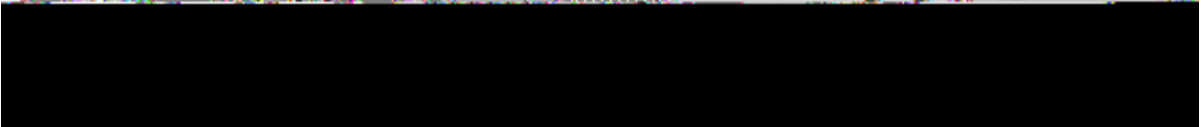




| | | | | | | |
|--|--|--|--|--|---|--|
| | | | | | (a)短路排除的条件： — PCB总体技术条件符合GB/T 16261的要求； | |
|--|--|--|--|--|---|--|



| | | | | | | |
|--|--|--|--|--|-------------------|--|
| | | | | | (a)短路故障可以排除的条件是元件 | |
|--|--|--|--|--|-------------------|--|





J
()

J1

7.2 3 1 8 3 2 1

8 6 7.1

J2

J2 1

J1 GB/T 700 Q235A

GB/T 700
(10±

Q275

(3.5± 0.25) mm

0.01) kg

J2 2

J2

(3.5

± 1) mm

(45± 0.5) kg

J2 3

3mm

15mm

()

1.5m

J2 4

J4 2 J4 3

J3

()
()

J4



J4 1 (23± 2)

4h

J4 2

J2 1

500nm(J3)

J4 3

J2 2

a)

800 nm J3

b)

700 nm J3

J4 4

1. 0± 0.1 m

7.2.3.8

J3

J4 5 J2 1 J2 2

J5

J5 1

a)

b)

c)

d)

e)

f)

2mm

J5 2

a)

b)

c)

J6

a)

b)

c)

d)

e)

f)

g)



J7

J1

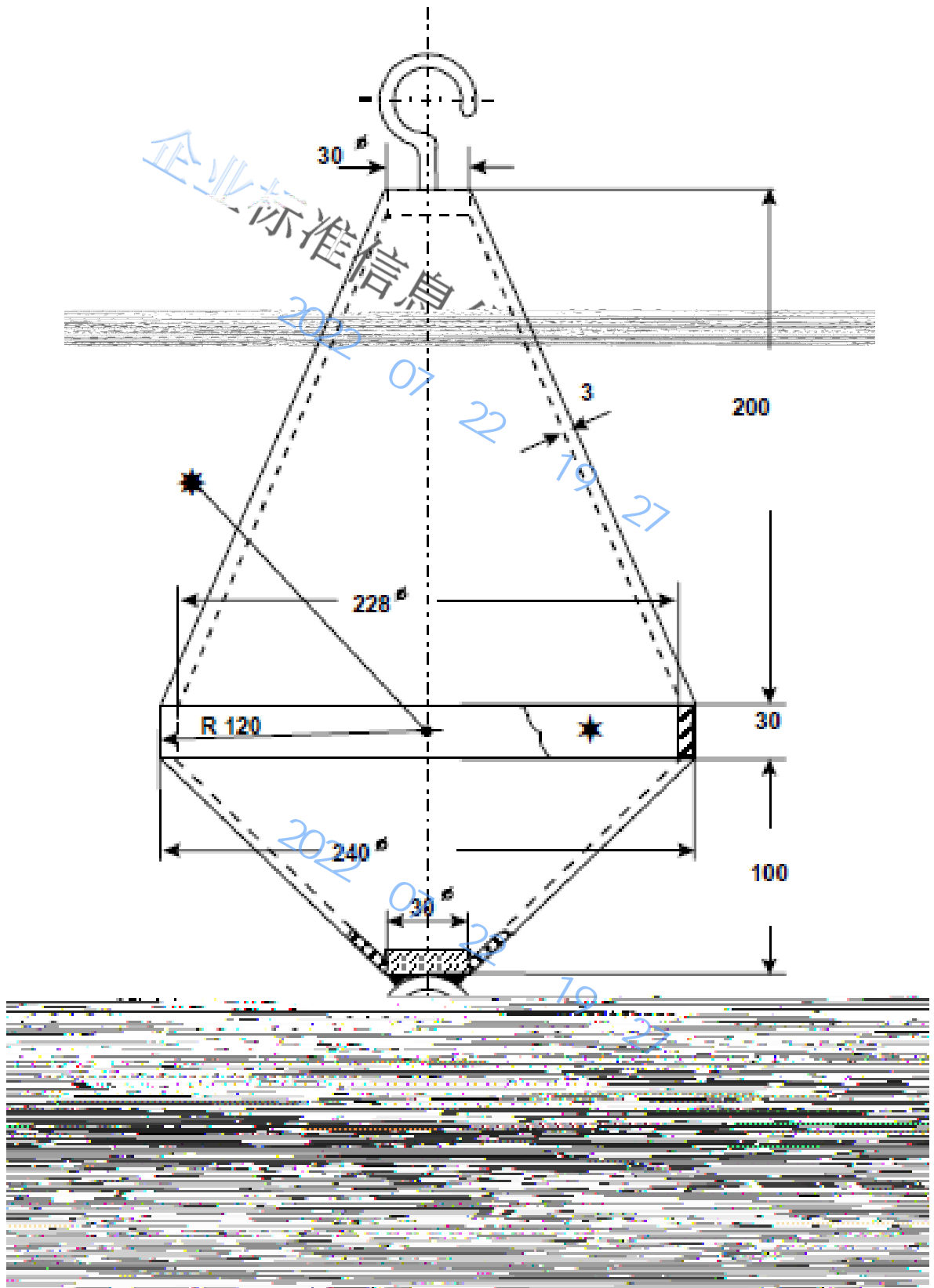
J2

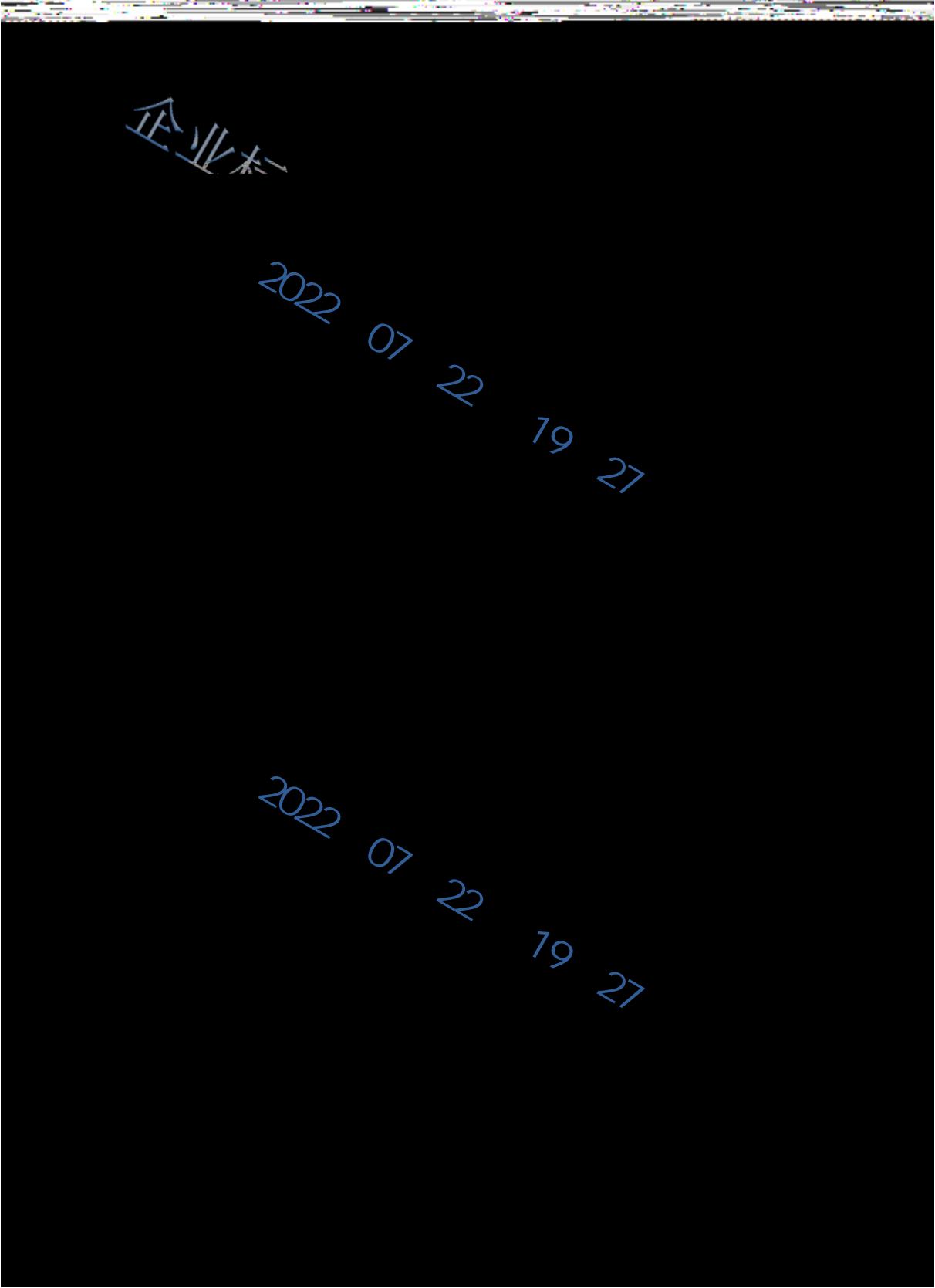
J1

| | | |
|--|----------|----------|
| | | |
| | 1m | 2m |
| | nm | nm |
| | 8 | 10 |
| | 4+Q 76+4 | 5+Q 76+5 |
| | 10 | 12 |
| | 5+Q 76+5 | 6+Q 76+6 |

J2

| | | | | |
|--|----------------------------|---------|-----|--|
| | nm | nm | m | |
| | 16 8+Q 76+8 | 360-720 | 2 1 | |
| | 16 8+Q 76+8 | 300-720 | 2 1 | |
| | 10 6+Q 76+4 5+Q 76+5 | 300-870 | 2 1 | |
| | | | | |

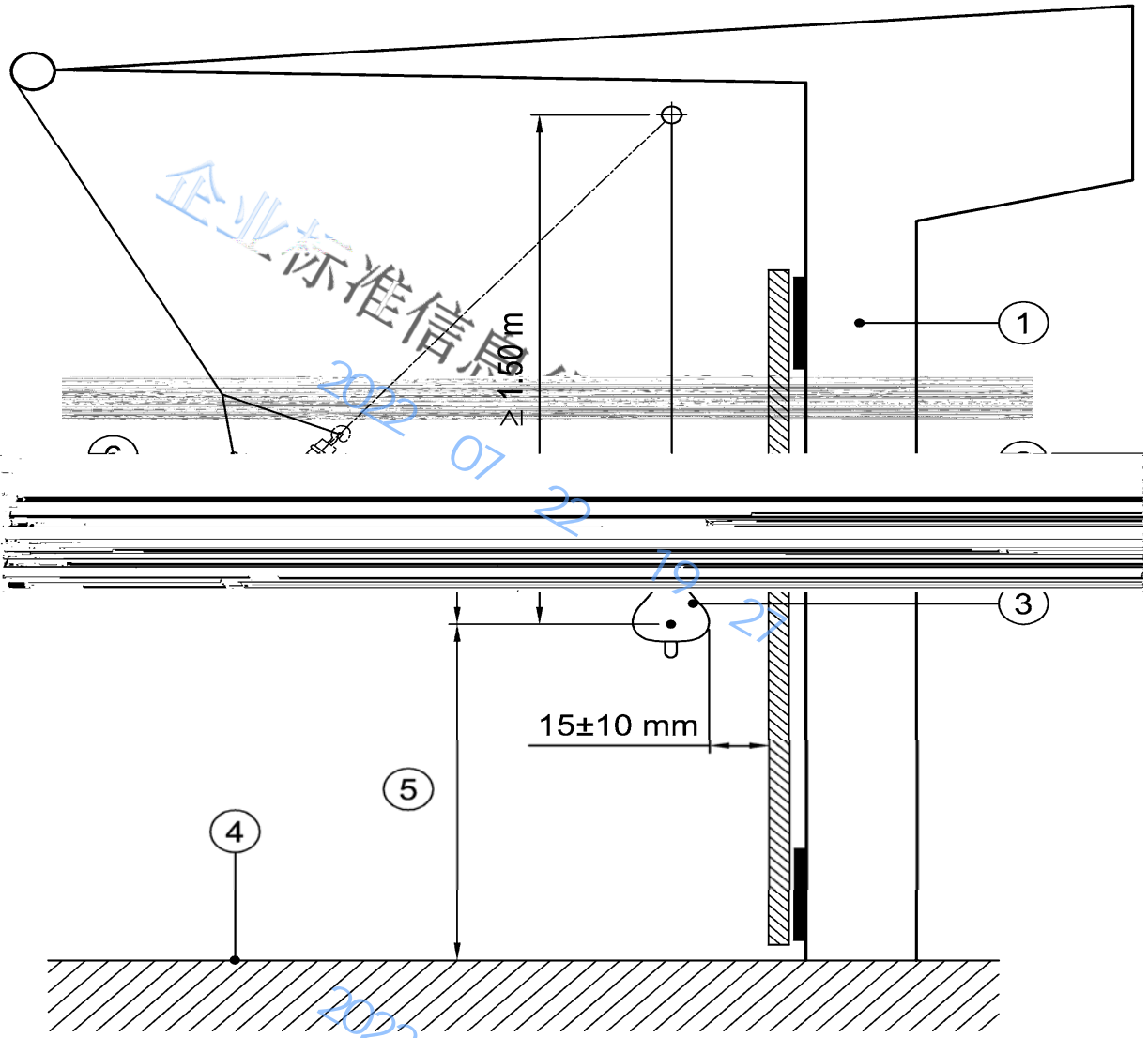




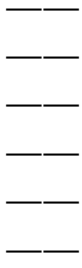
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H—



1m

7.238

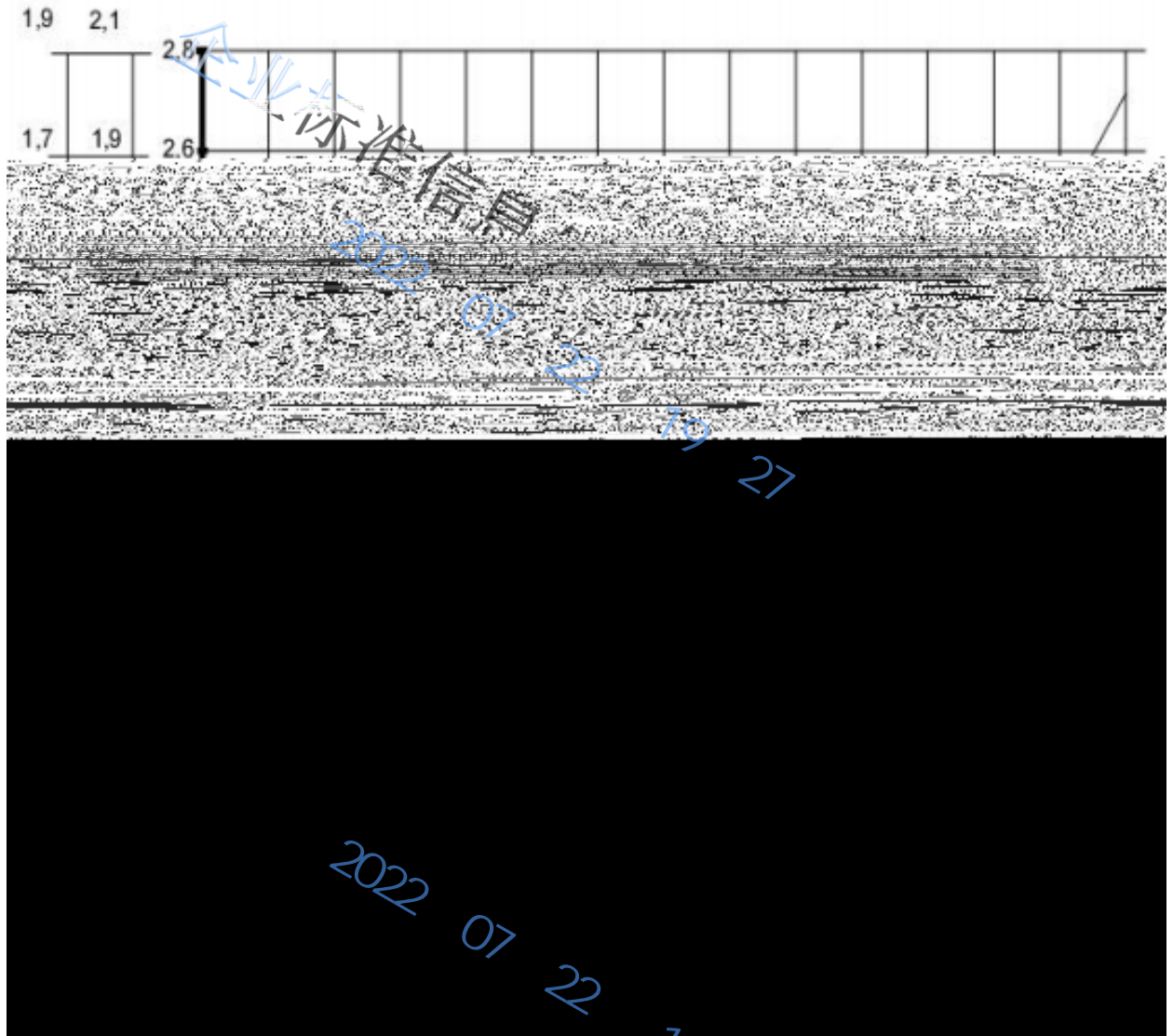
J2 4

J3



K

()



m/s

H

m

*

5 7.3 1

**

5 7.1. 4

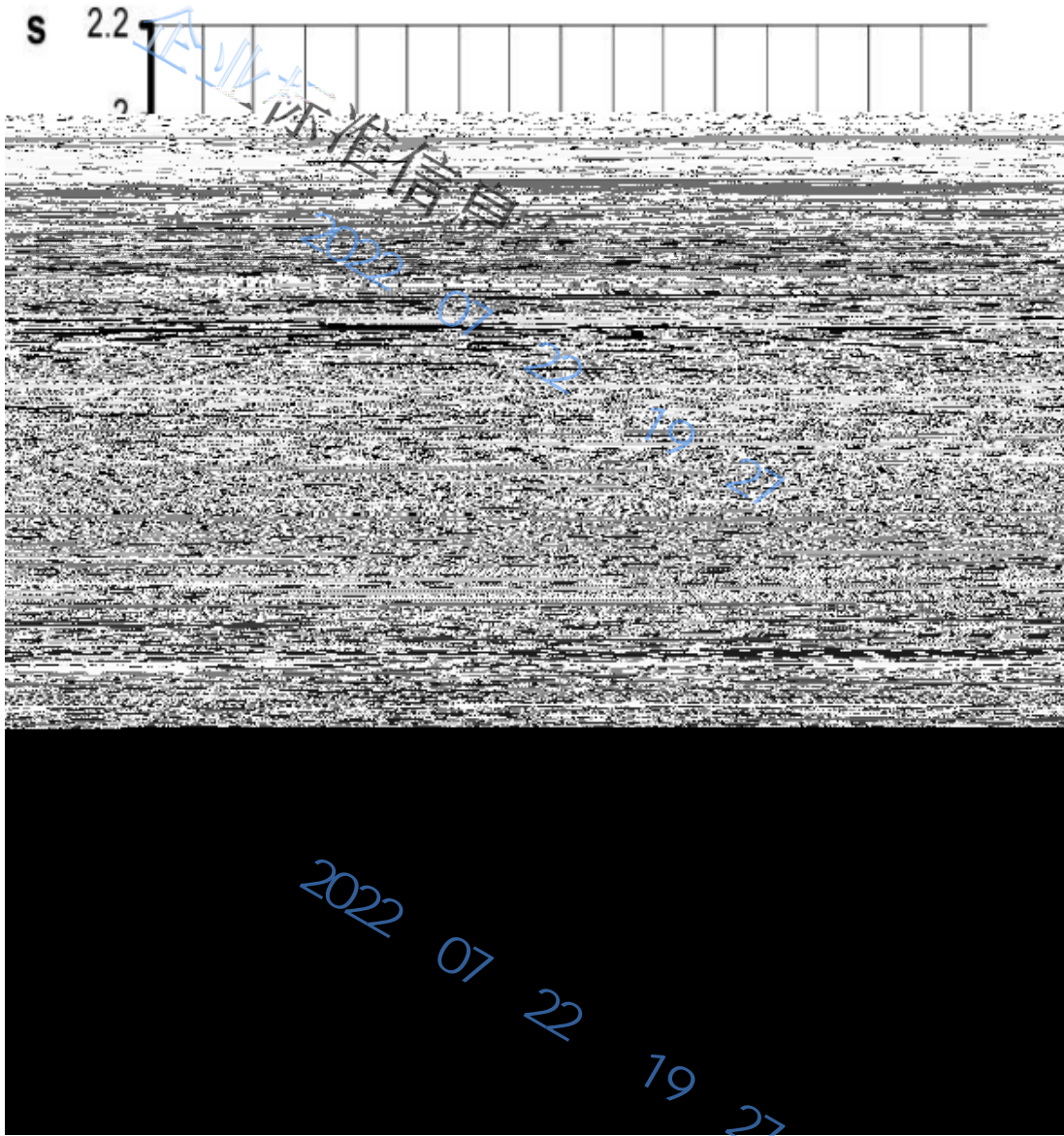
3 5m/s

K1

(5 7. 1)



L
()



S

m

m/s

(10 4 1. 1) ()

(10 4 3 1)

50%

[10 4 3 2a]

1/3

[10 4 3 2b]

10 4 3

L1

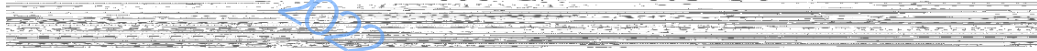
(10 4)



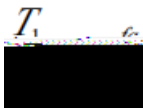
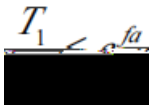
(M)

M

- a)
- b)
- c)



- a)
 - b)
 - c)
 - d)
- MØ



()

f

a

T1 T2

MØ 1 T1 T2

MØ 1.1

T1/T2

125%

1.25

8 2 2

8 2 2

MØ 1.2



T1/T2

a)

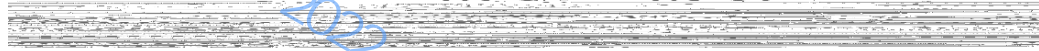
0.5 m/s²

b)

0.8 m/s²

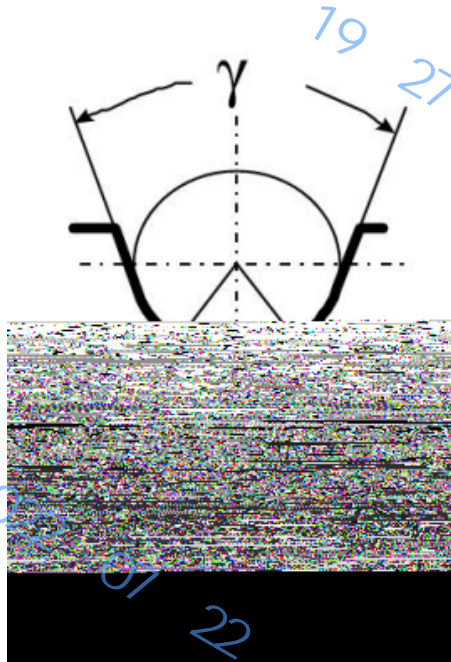
M 1.3

T1/T2



M 2

M 2.1



$$f = \mu \cdot \frac{4 \left(\cos \frac{\gamma}{2} - \sin \frac{\beta}{2} \right)}{\pi - \beta - \gamma - \sin \beta + \sin \gamma}$$

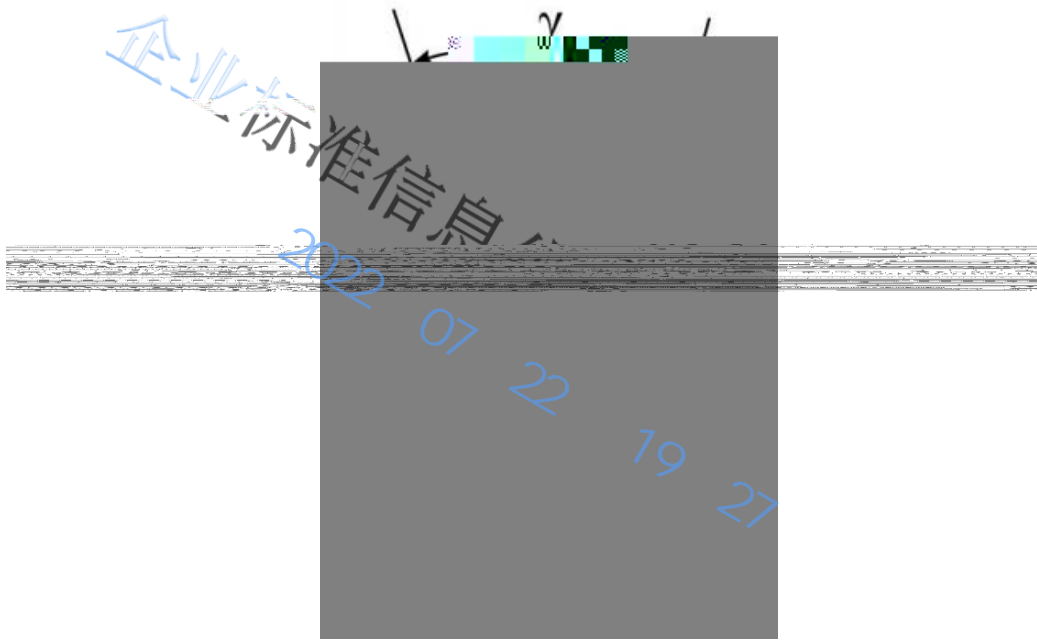
μ

1060(1.83)

80%



)
M2 1.2 V



$$f = \mu \cdot \frac{4 \left(1 - \sin \frac{\beta}{2} \right)}{\pi - \beta - \sin \beta}, \text{ 对于未经硬化处理的槽;}$$

$$f = \mu \cdot \frac{1}{\sin \frac{\gamma}{2}}, \text{ 对于经硬化处理的槽;}$$

——轿厢滞留的工况:



1060(1.83)

80%

350

M2 2 2



0.12

企业本

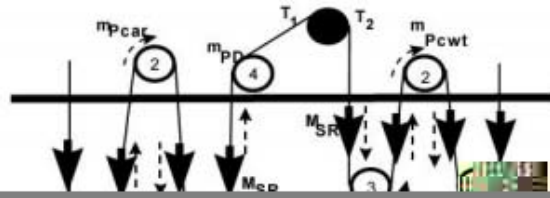
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$\mu = 0,2$

MB

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ms



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 2022 07 22 19 27

1

1

n_{Pcar}
 n_{Pcwt}
 n_{PID}
 n_{IP}

J_{pcar}/R^2

kg

J_{Pcwt}/R^2

kg

$(2 \quad) J_{PID}/R^2$

kg

J_{DP}/R^2

kg



n_s
 n_c ()
 n_t
 P () ()
 Q kg
 M_{wt} kg
 M_{Rcar} [(0.5H y) × n_s ×] kg
 M_{Rcwt} M_{R}
 M_{R} () [(0.5H y) × n_c ×]
kg
 M_{Rcar} M_{R}
 M_{Rcwt} M_{R}
 M_{rav} [(0.25H 0.5y) × n_t ×]
 M_{omp} kg
 F_{Rcar} () N
 F_{Rcwt} () N
 H m
 y H/2 m
 T_1 T_2 N
 r () m/s^2
 g_n m/s^2
 i_{Pcar} ()
 i_{Pcwt} ()

 f
 a



(N)

Nl

9.2.2

St

a)

()

b)

c)

N2

N_{equi v}

(U V)

5% 6%

N_{equi v}

$$N_{equi v} = N_{equi v}(t) + N_{equi v}(p)$$

N_{equi v}(t)

N_{equi v}(p)

N2.1 N_{equi v}(t)

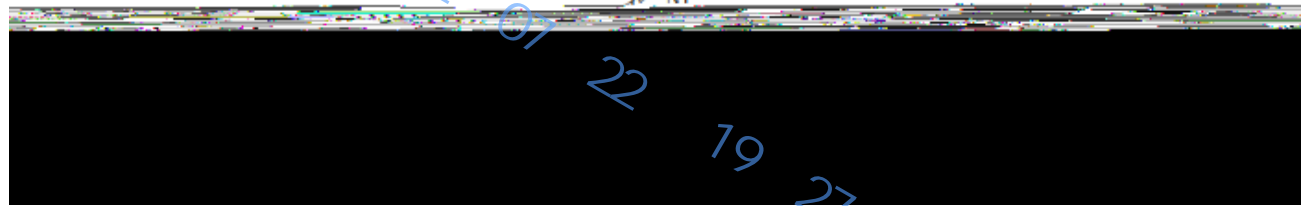
N_{equi v}(t)

Nl

U

N_{equi v}(t) 1

表 N1



N2.2 N_{equi v}(p)

200

$$N_{equi v}(t) = K_D (N_{eq} + 4 \cdot N_{pe})$$

N_{ps}

N_{pr}

K_p



Dt
Dp
N3

Dt/dr



Nequi v

N2

例 1.

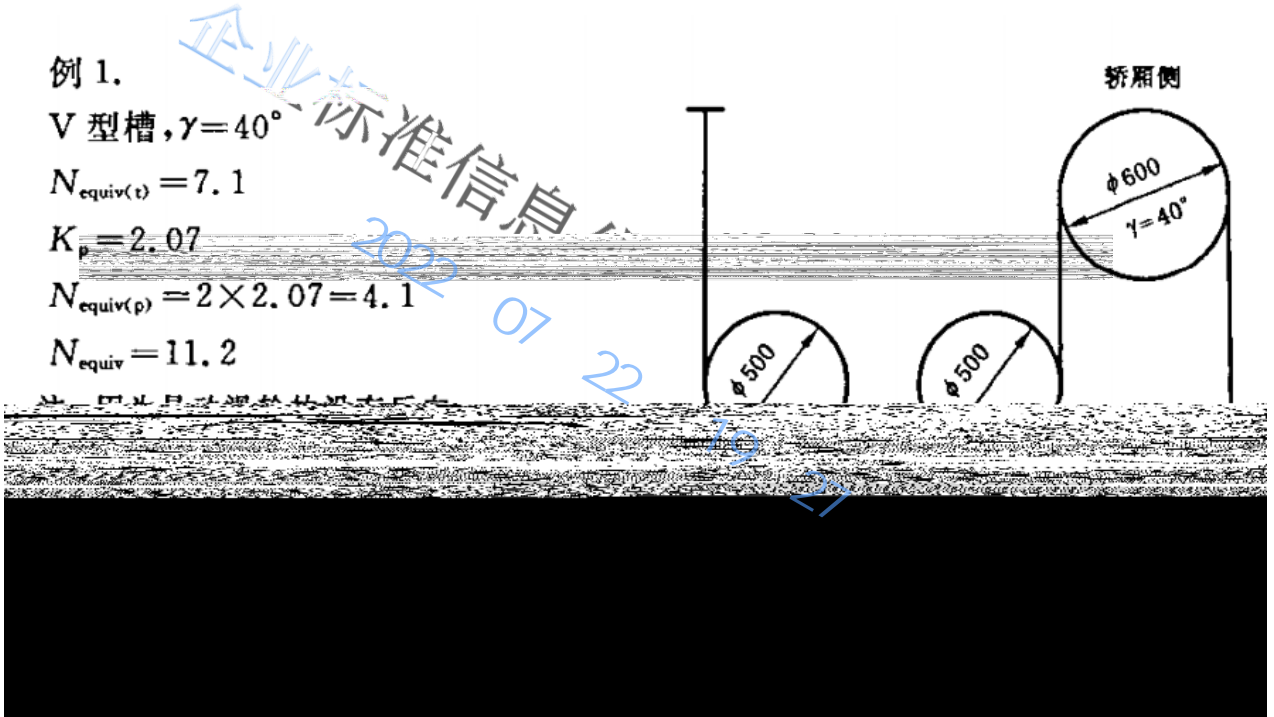
V 型槽, $\gamma=40^\circ$

$$N_{\text{equiv}(t)} = 7.1$$

$$K_p = 2.07$$

$$N_{\text{equiv}(p)} = 2 \times 2.07 = 4.1$$

$$N_{\text{equiv}} = 11.2$$



例 2.

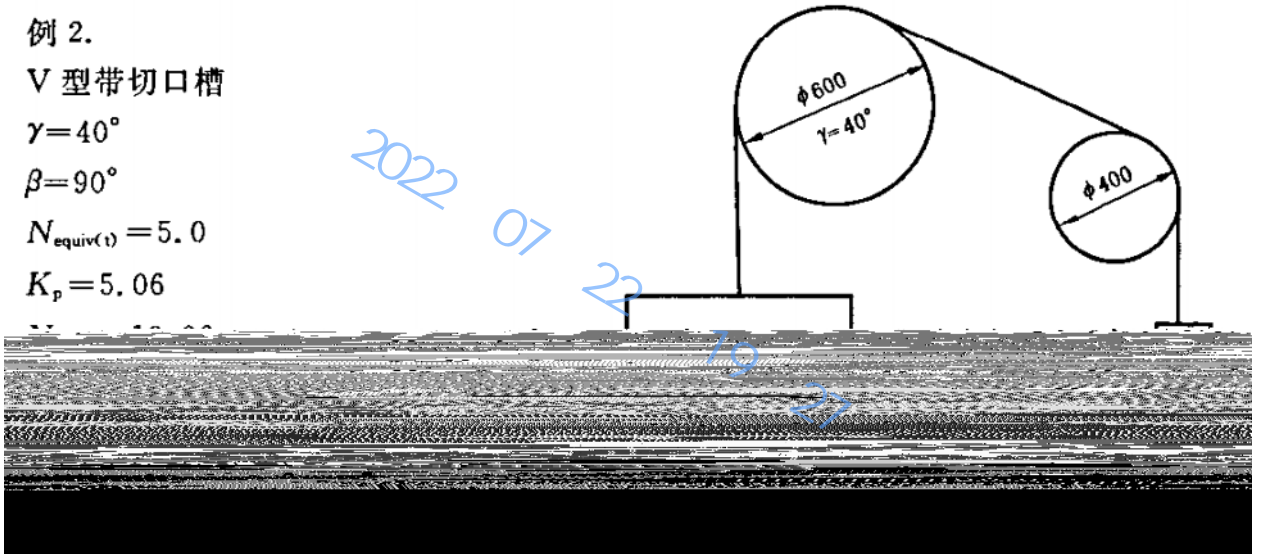
V 型带切口槽

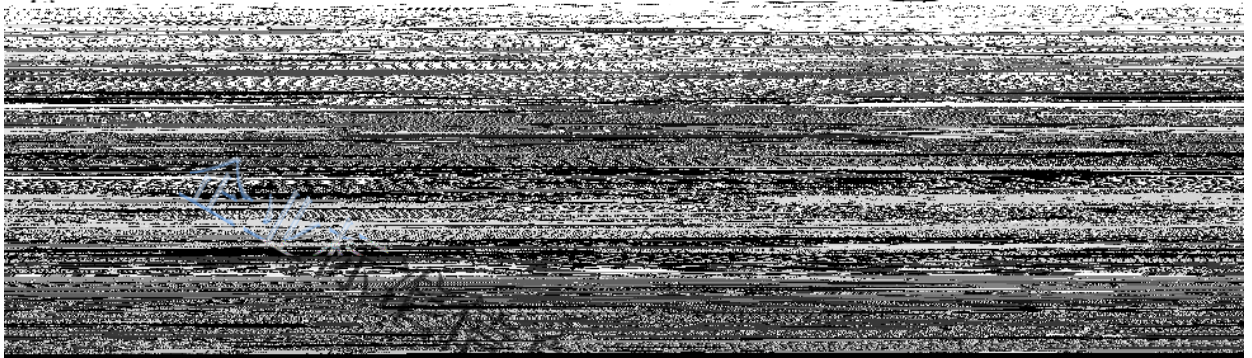
$\gamma=40^\circ$

$\beta=90^\circ$

$$N_{\text{equiv}(t)} = 5.0$$

$$K_p = 5.06$$





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2022 07 22 19 27